ORDER NO. VRD9202M103

Service Manual

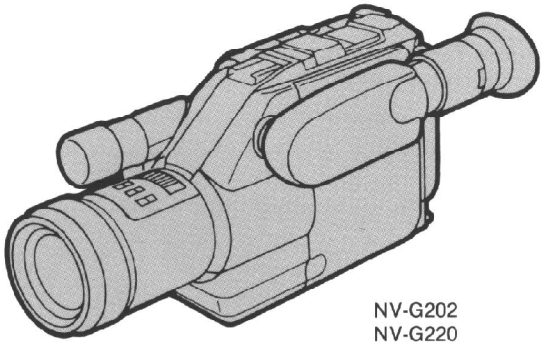
General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Panasonic VHS C VHS PAL 625

HQ

VHS-C Movie

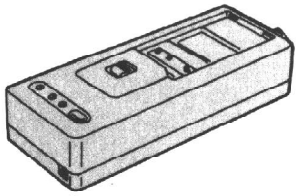
NV-G202E/B/A
NV-G220EN



NV-G202
NV-G220

AC Adaptor

VW-AS1E/B/A (B)



VW-AS1

VHS-C MOVIE (NV-G202 E/B/A/-NV-G220EN)
SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
ADJUSTMENT PROCEDURES/ПРОЦЕДУРА РЕГУЛИРОВКИ
- Disassembly procedures/методика разборки
- Replacement of the cylinder unit/методика замены видеоголовки
- Disassembly procedures of zoom motor and focus motor/методика разборки моторов зума и фокуса
- Assembly adjustment procedures of mechanism/методика разборки и настройки механизма
- Interchangeability adjustment/процедура механической регулировки
- Electrical adjustment procedures/процедура электрической регулировки
- Location of test point and controls (1)/расположение контрольных точек и органов управления (1)
- Location of test point and controls (2)/расположение контрольных точек и органов управления (2)

BLOCK DIAGRAMS /БЛОК-СХЕМЫ
SCHEMATIC DIAGRAMS/ПРИНЦИПИАЛЬНЫЕ СХЕМЫ
EXPLODED VIEWS/СБОРОЧНЫЕ ЧЕРТЕЖИ
- VTR mechanism section (1)/механизм видеомагнитофона (секция 1)
- VTR mechanism section (2)/механизм видеомагнитофона (секция 2)
- VTR mechanism section (3)/механизм видеомагнитофона (секция 3)
- Camera lens section/модуль оптики
- Frame and casing parts section (1)/корпус и шасси (секция 1)
- Frame and casing parts section (2)/корпус и шасси (секция 2)
- E.V.F. section/секция видоискателя

PACKING PARTS AND ACCESSORIES SECTION/УПАКОВОЧНЫЕ МАТЕРИАЛЫ И ПРИНАДЛЕЖНОСТИ
MECHANICAL REPLACEMENT PARTS LIST/СПИСОК МЕХАНИЧЕСКИХ ЗАПАСНЫХ ЧАСТЕЙ
ELECTRICAL REPLACEMENT PARTS LIST/СПИСОК ЭЛЕКТРИЧЕСКИХ ЗАПАСНЫХ ЧАСТЕЙ

AC ADAPTOR (VW AS1E/B/A)
AC ADAPTOR BLOCK DIAGRAM/БЛОК-СХЕМА АДАПТОРА
AC ADAPTOR SCHEMATIC DIAGRAM/ПРИНЦИПИАЛЬНАЯ СХЕМА АДАПТОРА
EXPLODED VIEW/СБОРОЧНЫЙ ЧЕРТЕЖ
MECHANICAL REPLACEMENT PARTS LIST/СПИСОК МЕХАНИЧЕСКИХ ЗАПАСНЫХ ЧАСТЕЙ
ELECTRICAL REPLACEMENT PARTS LIST/СПИСОК ЭЛЕКТРИЧЕСКИХ ЗАПАСНЫХ ЧАСТЕЙ

Panasonic

SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: BATTERY; DC 6.0 V Consumption; Recording mode; 6.9 W (Battery operation) 10.8 W (with Zoom Auto Light)
VIDEO RECORDING SYSTEM	4 rotary heads, helical scanning system PAL
TAPE FORMAT	VHS-C Cassette Tape (Tape width 12.7 mm)
TAPE SPEED	SP mode: 23.39 mm/s LP mode: 11.7 mm/s Record/Playback Time SP mode: 45 min. with NV-EC45EHG LP mode: 90 min. with NV-EC45EHG FF/REW Time less than 5 min. with NV-EC45EHG
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lux
	MINIMUM REQUIRED ILLUMINATION: 3 lux
	LENS: Built-in 8 : 1 2-Speed Power Zoom Lens with Digital AI Auto Focus, Auto Iris, Manual/Auto Focus System, F1.4 (5 ~ 40 mm), Filter Diameter 49 mm
	IMAGE SENSOR: 1/3 inch CCD Image Sensor
	VIEW FINDER: 2/3" Electric View Finder

ITEM	SPECIFICATION
VIDEO	HEADS: 4 rotary heads, 1 flging erase head
	OUTPUT: PHONO CONNECTOR; 1.0 Vp-p 75Ω unbalanced
AUDIO	HEAD: 1 Stationary head (Normal Audio)
	INPUT: MIC IN (M3); −70 dB, 4.7 kΩ unbalanced
	OUTPUT: PHONO CONNECTOR; −8 dB, 600Ω unbalanced EARPHONE JACK; −28.5 dB, 8Ω unbalanced
WEIGHT	Approx. 1 kg (without Battery Pack)
DIMENSIONS	142(W) × 120(H) × 283(D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack 1 pc. Cassette Adaptor 1 pc. Shoulder Strap 1 pc. AV Output Cable 1 pc. DC Input Cable 1 pc. Battery for Cassette Adaptor Operation 1 pc. Battery for Clock Operation 1 pc. RF Adaptor (NV-G202B/A, G220EN) 1 pc. Zoom Auto Light 1 pc. BNC/Phono Adaptor Plug (NV-G202B)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY PROCEDURES

2-1-1. DISASSEMBLY FLOWCHART

The following flowchart describes the order or steps for removing the cabinet parts and certain printed circuit boards in order to make access to the items needing servicing. To reassemble the unit, follow the steps in reverse order.

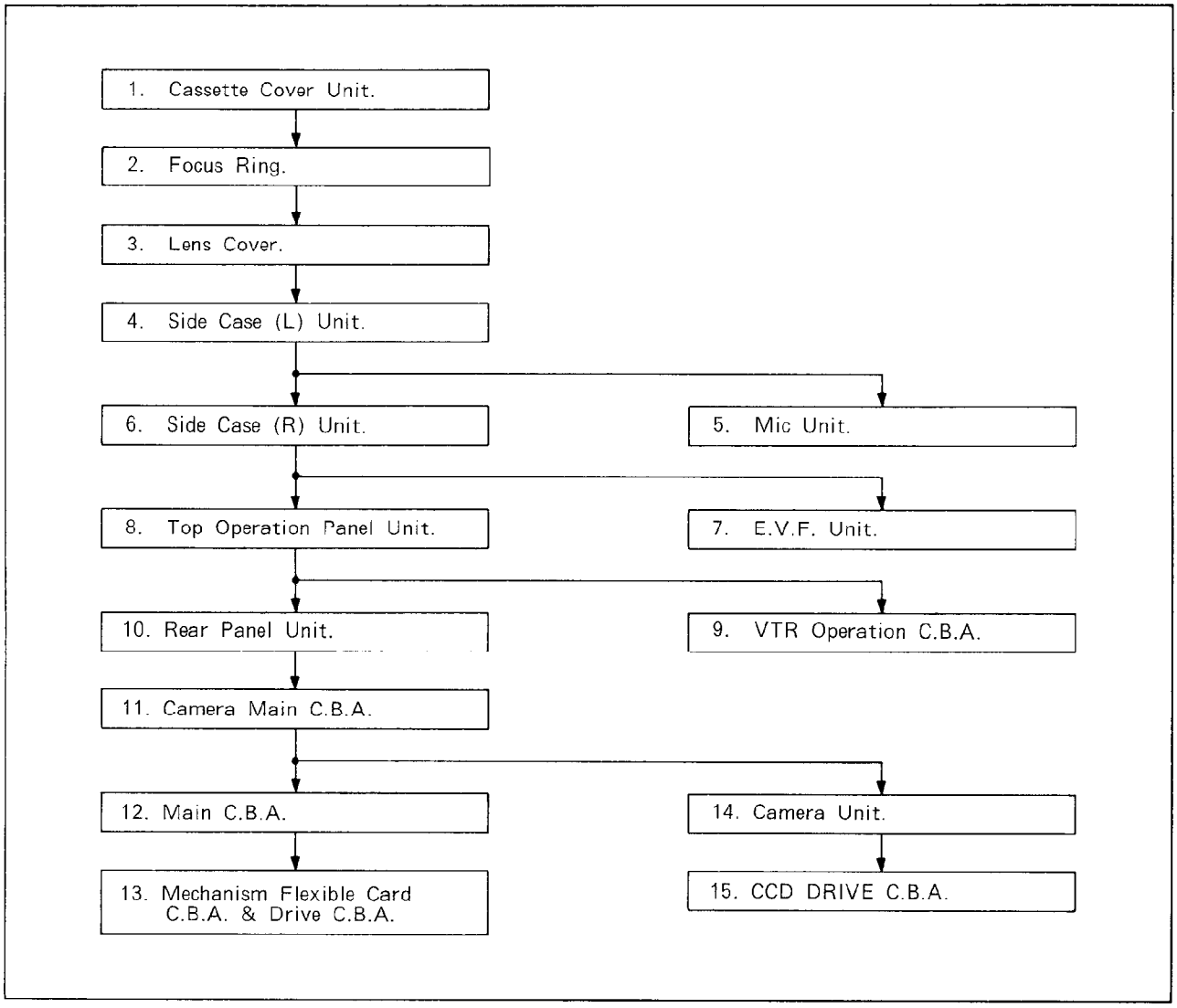

1. Cassette Cover Unit.
2. Focus Ring.
3. Lens Cover.
4. Side Case (L) Unit.
6. Side Case (R) Unit.
5. Mic Unit.
8. Top Operation Panel Unit.
7. E.V.F. Unit.
10. Rear Panel Unit.
9. VTR Operation C.B.A.
11. Camera Main C.B.A.
12. Main C.B.A.
14. Camera Unit.
13. Mechanism Flexible Card C.B.A. & Drive C.B.A.
15. CCD DRIVE C.B.A.

Fig. D1

2-1-2. DETAILED DISASSEMBLY METHOD

[1] REMOVAL OF THE CASSETTE COVER UNIT

Remove.....2 Screws(A)

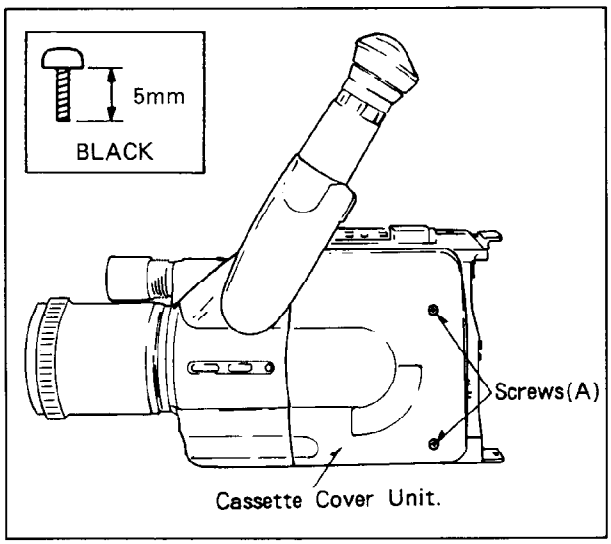


Fig. D2

[2] REMOVAL OF THE FOCUS RING

Remove.....Lens Hood
(By rotating counter-clockwise)
Unlock.....3 Locking Portion(B)
(By Screwdriver(−))

Set the screwdriver(−) to square hole of the Focus Ring, and then release the locking portion one by one by pushing the screwdriver to the inner direction.

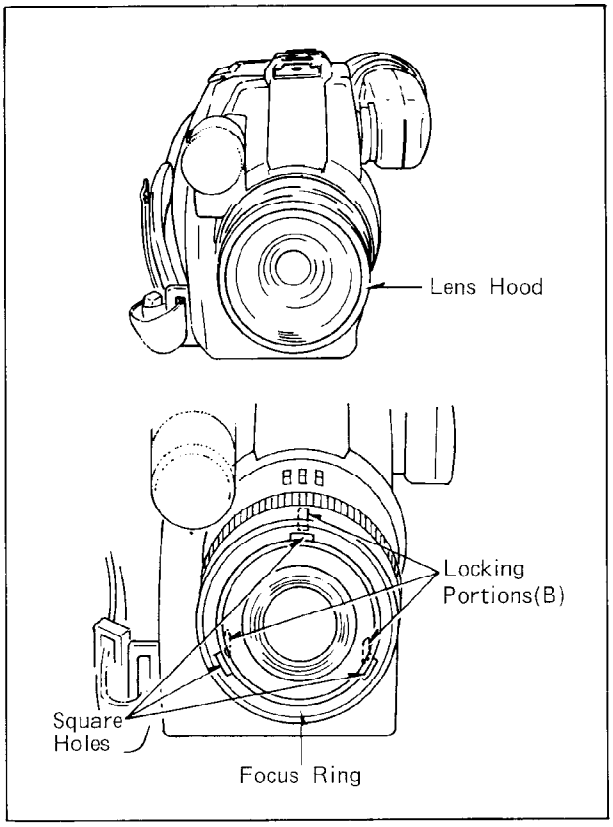


Fig. D3

[CAUTIONS]

* HOW TO INSTALL THE FOCUS RING
Install the Focus Ring so that the cutting portion(C) on Focus Ring comes to projection(D) on Lens Unit.

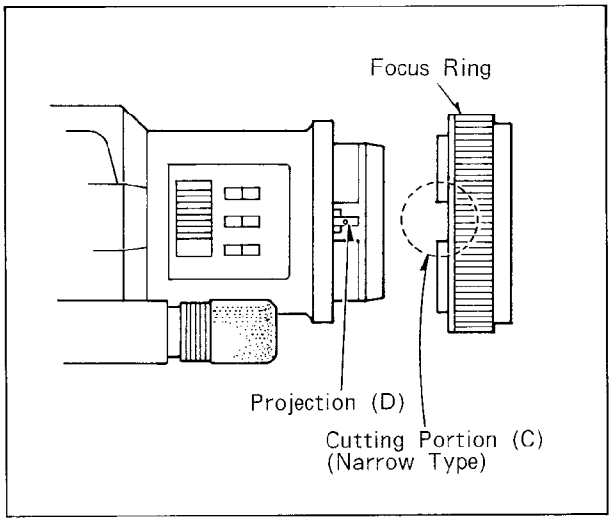


Fig. D4

[3] REMOVAL OF THE LENS COVER

Remove.....2 Screws(E)

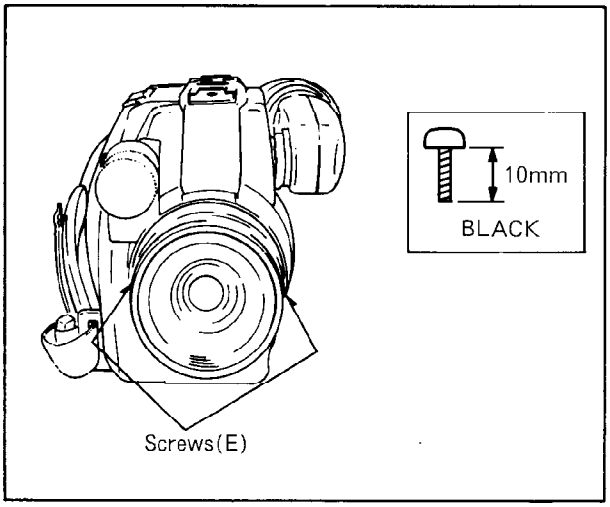
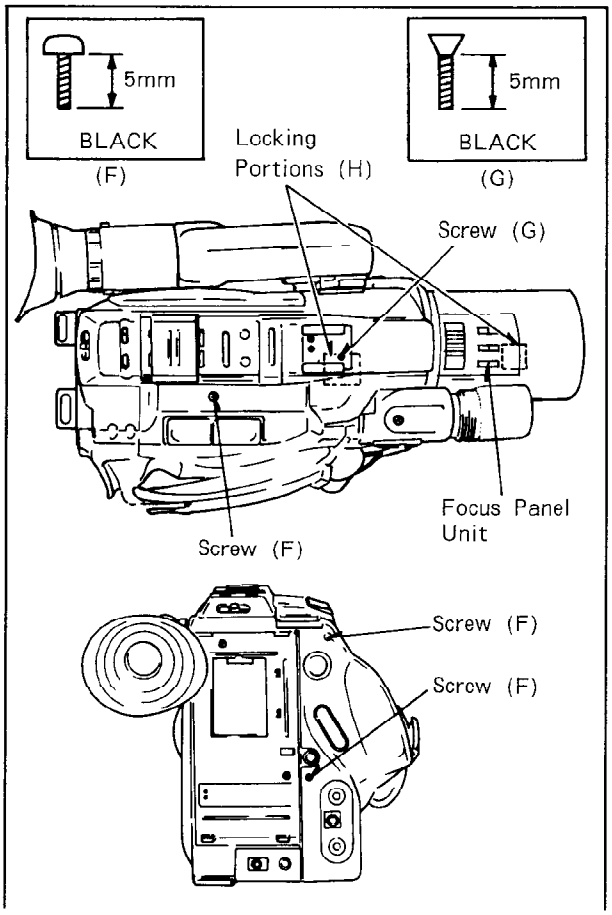


Fig. D5

[4] REMOVAL OF THE SIDE CASE (L) UNIT

Remove.....Focus Panel Unit
6 Screws(F)
Screw(G)
Disconnect.....Connector(B4001)
Unlock.....2 Locking Portions(H)



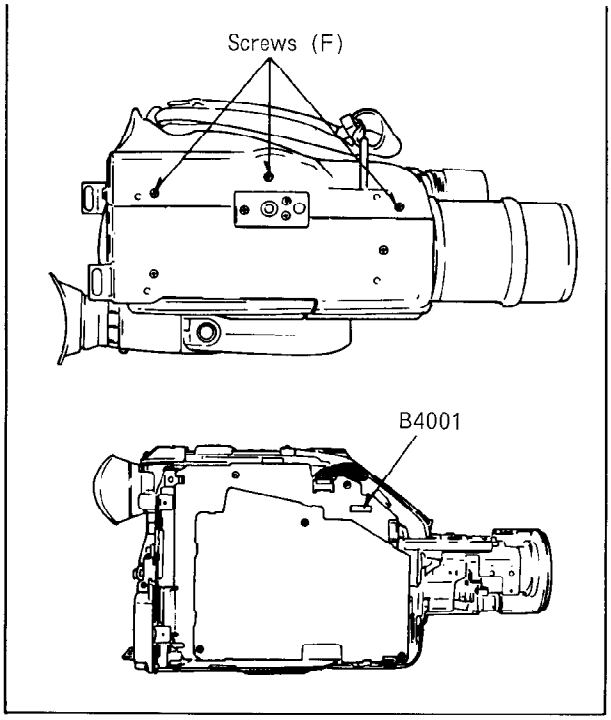


Fig. D6

[5] REMOVAL OF THE MIC UNIT

Remove.....Screw(I)
Mic Case
2 Screws(J)
Disconnect.....2 Connectors(P4303,P4304)

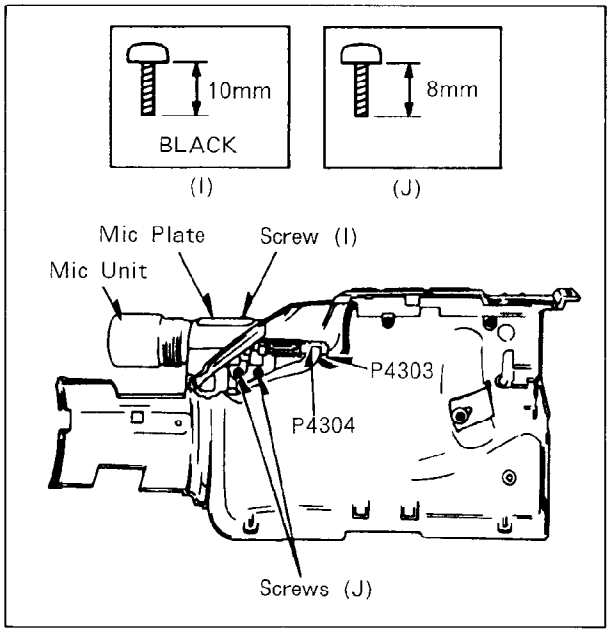


Fig. D7

[6] REMOVAL OF THE SIDE CASE (R) UNIT

Remove.....3 Screws(K)
4 Screws(L)
Screw(M)
Battery Cover
Disconnect.....Connector(P6004)

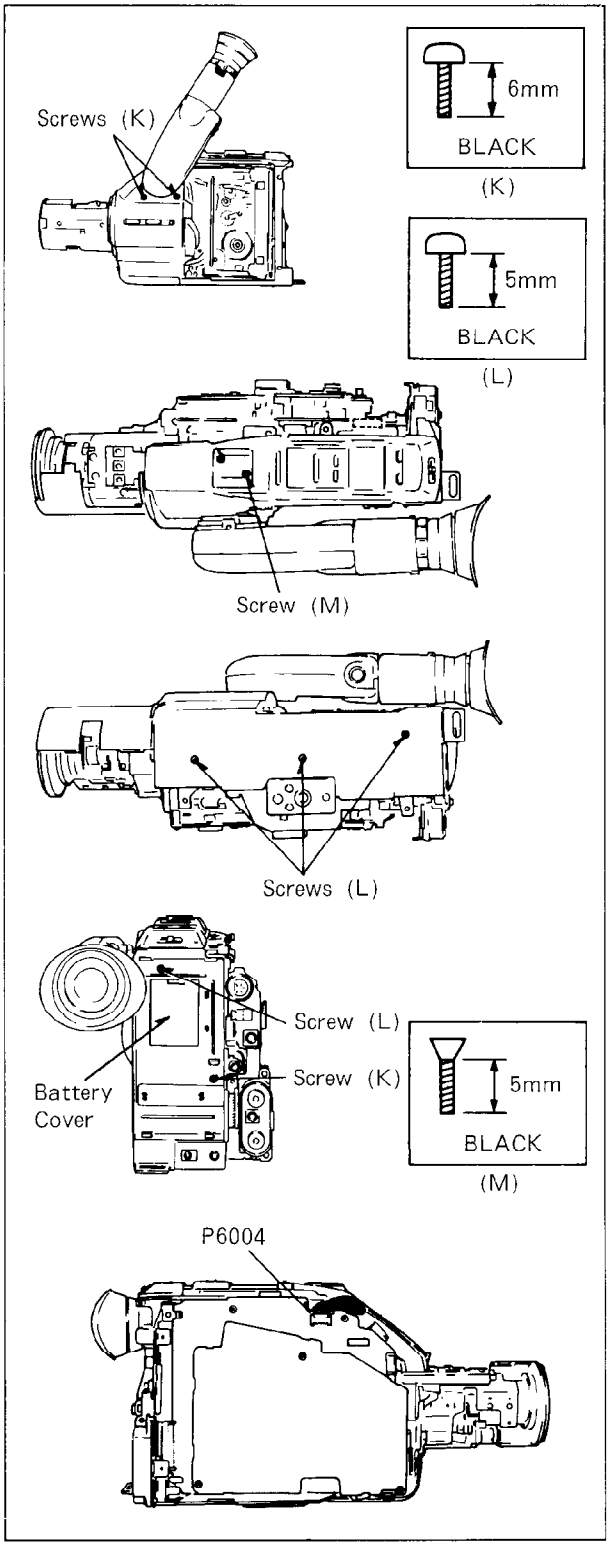


Fig. D8

[7] REMOVAL OF THE E.V.F. UNIT

Remove.....2 Screws(N)
Screw(O)

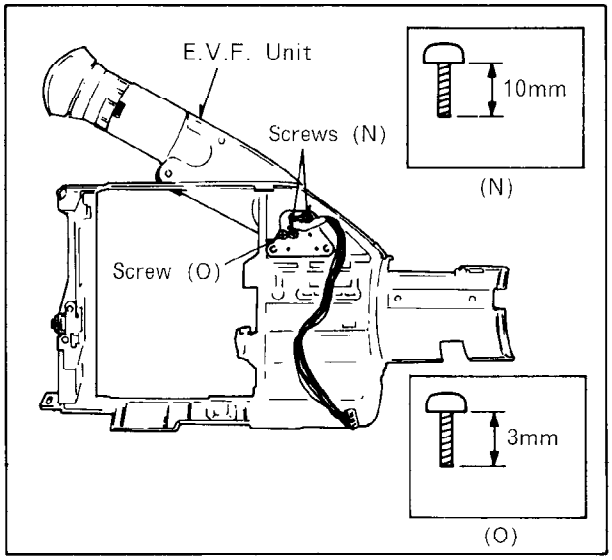


Fig. D9

[8] REMOVAL OF THE TOP OPERATION PANEL UNIT

Remove.....Screw(P)
Connector(B1501)
Unlock.....4 Locking Portions(Q)

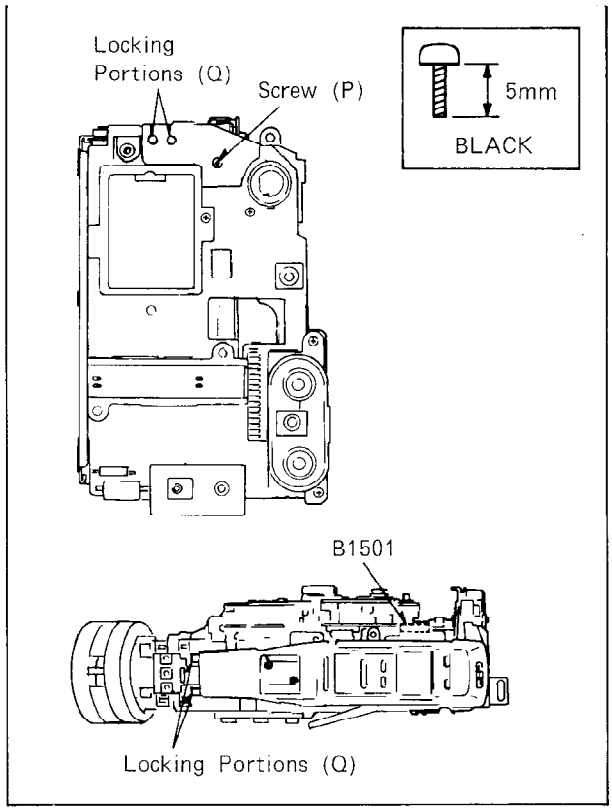


Fig. D10

[9] REMOVAL OF THE VTR OPERATION C.B.A.

Remove.....3 Screws(R)

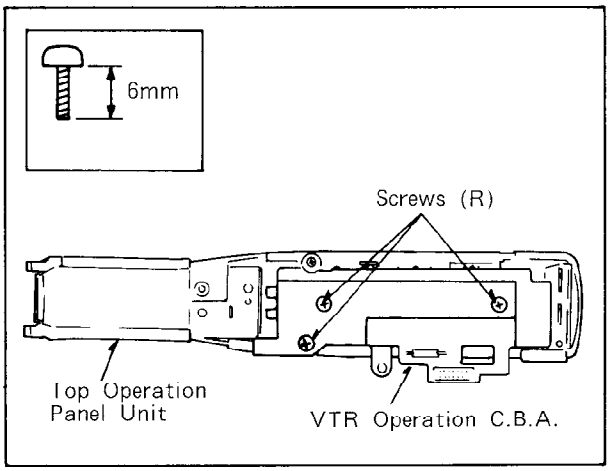


Fig. D11

[10] REMOVAL OF THE REAR PANEL UNIT

Remove.....2 Screws(S)
Disconnect.....Connector(B1702)

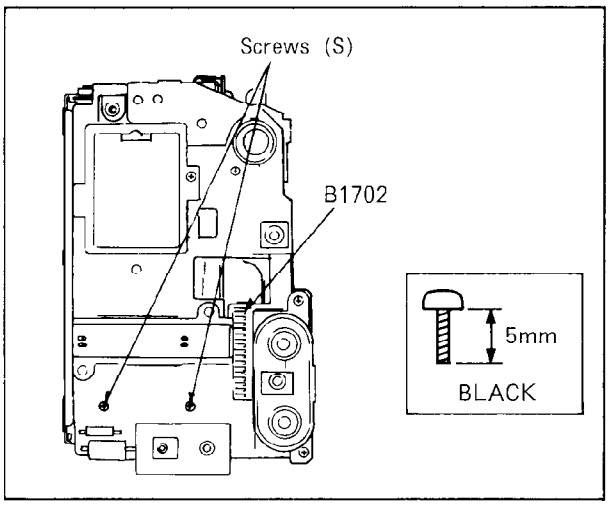


Fig. D12

[11] REMOVAL OF THE CAMERA MAIN C.B.A.

Remove.....Screw(T)
Disconnect.....4 Connectors
(B301, B302, B702, FP701)

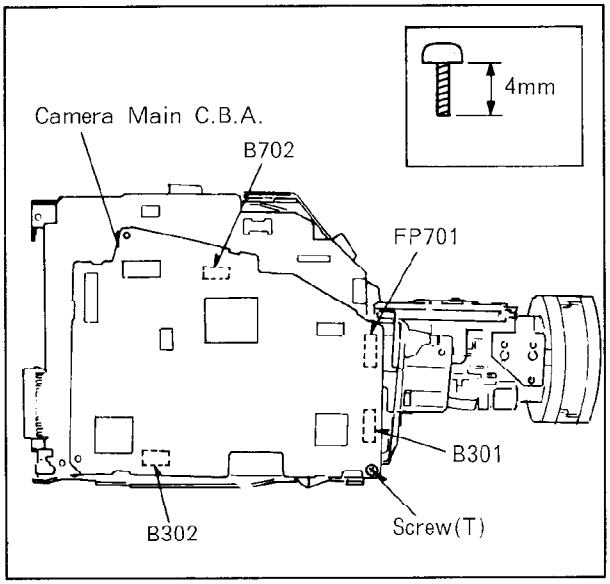


Fig. D13

[12] REMOVAL OF THE MAIN C.B.A.

Remove.....Screw(U)
Disconnect.....4 Connectors
(FP4002, FP5001, FP6001, B6003)

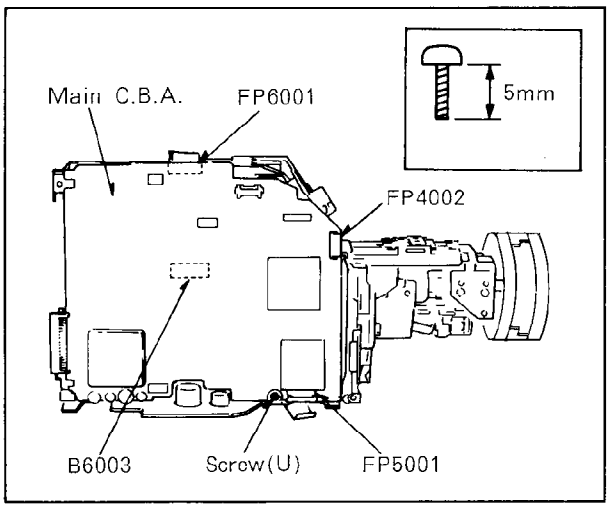


Fig. D14

[13] REMOVAL OF THE MECHANISM FLEXIBLE CARD C.B.A. AND DRIVE C.B.A.

[DRIVE C.B.A.]

Remove.....3 Screws(V)
Disconnect.....2 Connectors(P2102,P2103)
Unsolder.....4 Soldering Portions(W)

[MECHANISM FLEXIBLE CARD C.B.A.]

Remove.....4 Screws(X)
Unsolder.....15 Soldering Portions(Y)

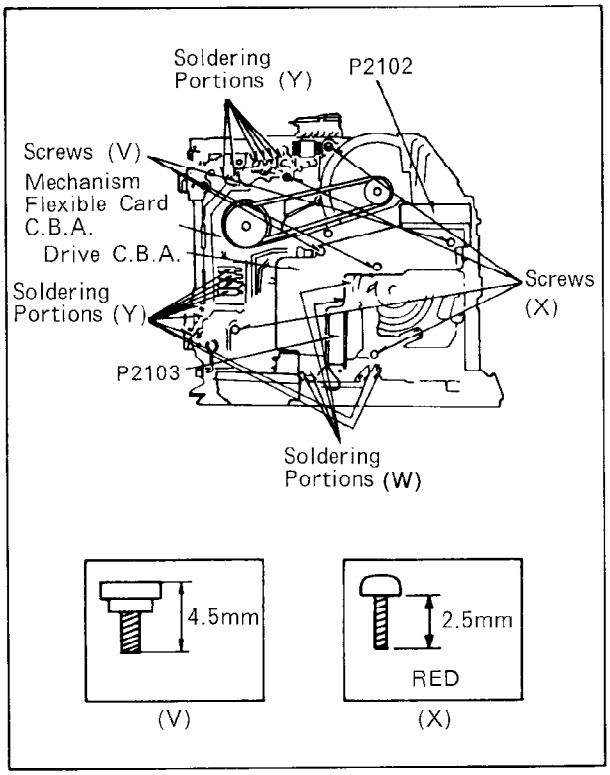


Fig. D15

[14] REMOVAL OF THE CAMERA UNIT

Remove.....4 Screws(Z)
Camera Operation(2) C.B.A.
[Disconnect.....Connector(B071)]

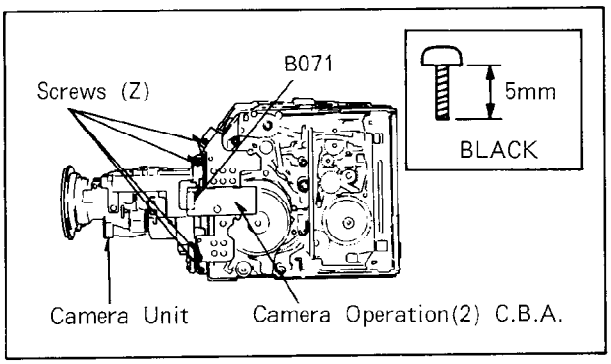


Fig. D16

[15] REMOVAL OF THE CCD DRIVE C.B.A.

Remove.....Camera Operation(1) C.B.A.
[Remove.....Screw(a)]
[Disconnect.....Connector(B051)]
Shield Plate
2 Screws(b)
Disconnect.....Connector(FP203)

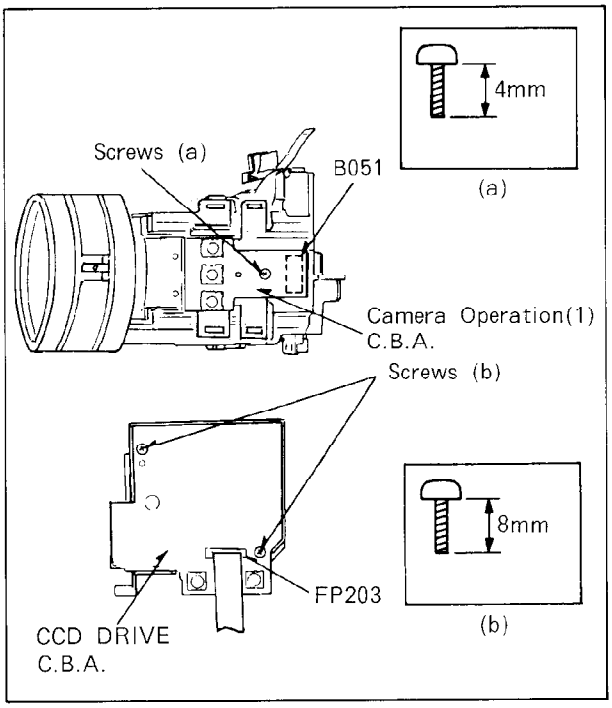


Fig. D17

2-2. REPLACEMENT OF THE CYLINDER UNIT

2-2-1. REPLACEMENT OF THE UPPER CYLINDER UNIT

Work with extremely care when removing or replacing the Upper Cylinder Unit.
Do not touch the Video Head during servicing.

1. Remove 2 screws as shown below.
2. Unsolder 18 soldered portions indicated by arrows on the Circuit Board.
3. Remove the Upper Cylinder Unit by lifting it upward.

Note:
Soldered portion can be easily removed by using solder sucking wire, etc.

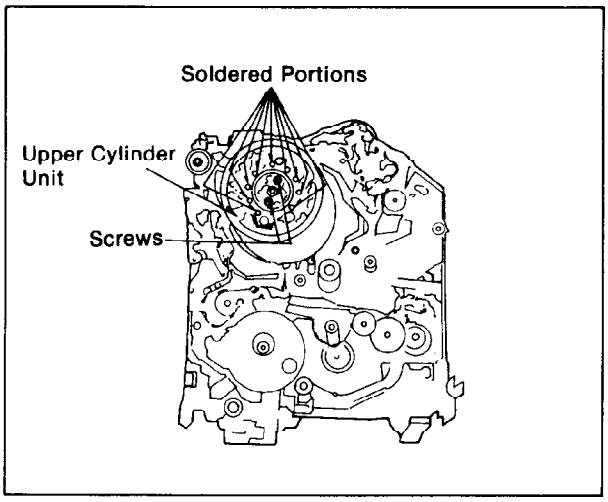


Fig. D18

4. The Upper Cylinder Unit can be reinstalled by reversing the removal procedure, however, when the Upper Cylinder is reinstalling, be extremely carefull so that white portion of circuit Board of the Upper Cylinder correctly matches the white portion of the bottom Cylinder.

Note:
1) If the Upper Cylinder Unit is reversely installed, no colour will appear when play back a pre-recorded tape.

2-2-2. REPLACEMENT OF DD CYLINDER UNIT

1. Remove the 3 screws and connector.
2. Take out D.D. Cylinder carefully.

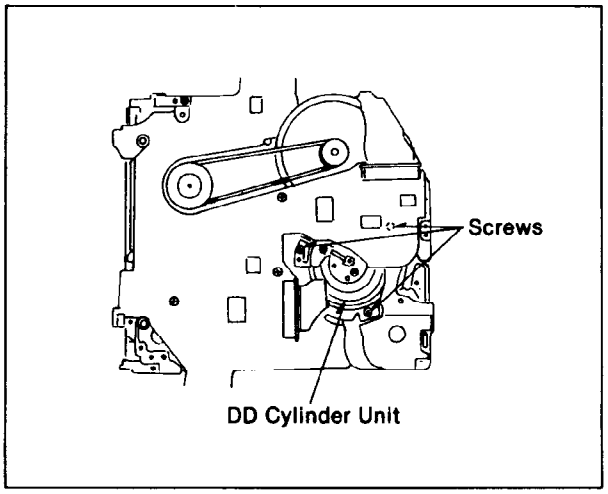


Fig. D19

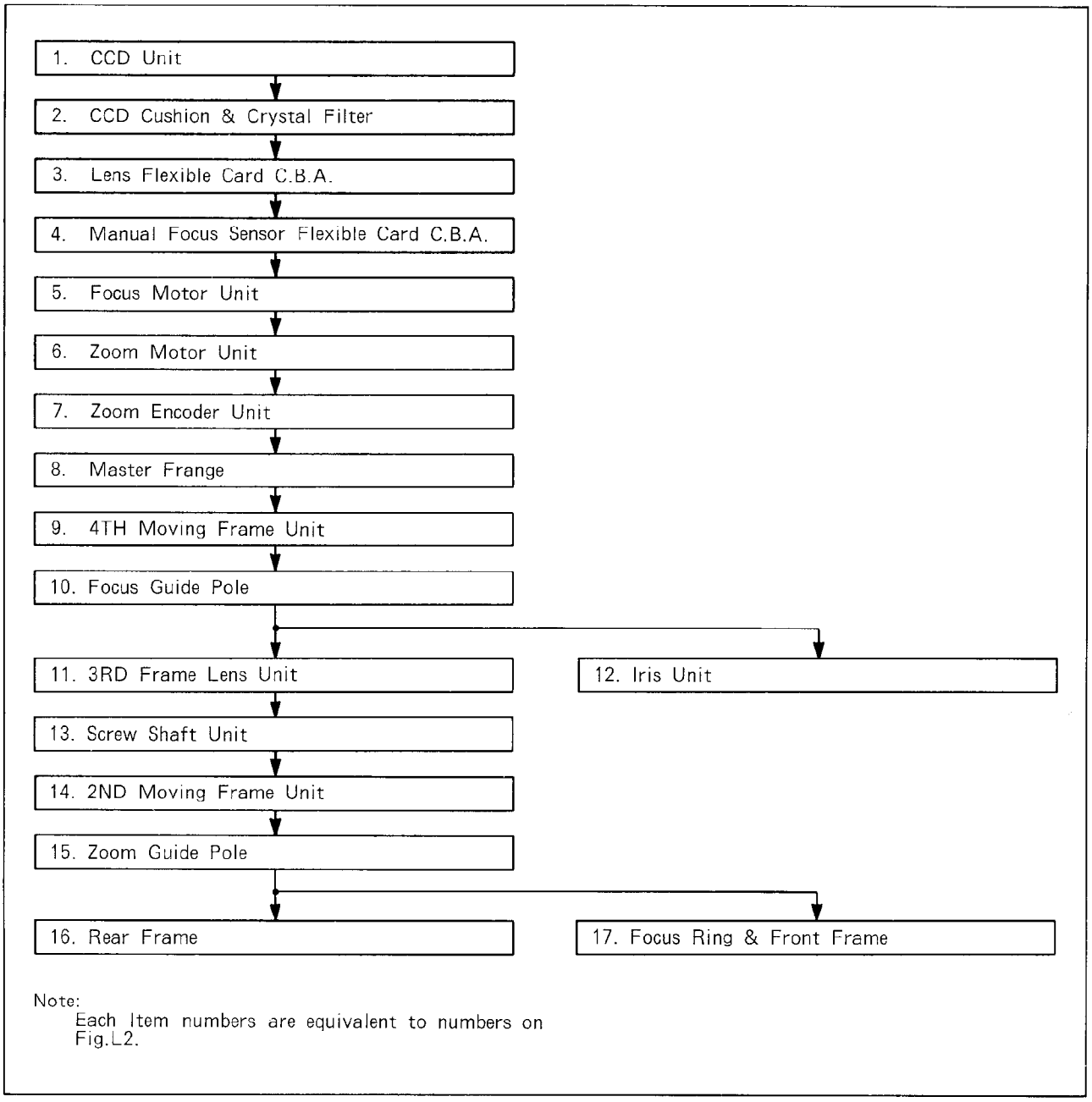
Note:
Since there is very little clearance between the D.D. Cylinder Unit and the chassis, remove the D.D. Cylinder Unit carefully.

3. Reinstall the new D.D Cylinder Unit, tighten the 3 screws and reconnect the connector.

Note:
(1) Gently rub the video head in direction of tape travel with Head cleaning stick.
(2) After replacement, confirm the performance.
If any further maintenance is required, perform "TAPE INTERCHANGEABILITY ADJUSTMENT ".

2-3. DISASSEMBLY PROCEDURES OF ZOOM MOTOR AND FOCUS MOTOR

The following flowchart describes order or steps for removing the Lens Units and certain Printed Circuit Boards in order to make access to the items needing service.
To reassemble the unit follow the steps in reverse order.


1. CCD Unit
2. CCD Cushion & Crystal Filter
3. Lens Flexible Card C.B.A.
4. Manual Focus Sensor Flexible Card C.B.A.
5. Focus Motor Unit
6. Zoom Motor Unit
7. Zoom Encoder Unit
8. Master Frange
9. 4TH Moving Frame Unit
10. Focus Guide Pole
11. 3RD Frame Lens Unit
12. Iris Unit
13. Screw Shaft Unit
14. 2ND Moving Frame Unit
15. Zoom Guide Pole
16. Rear Frame
17. Focus Ring & Front Frame

Note:
Each Item numbers are equivalent to numbers on Fig.L2.

Fig. L1

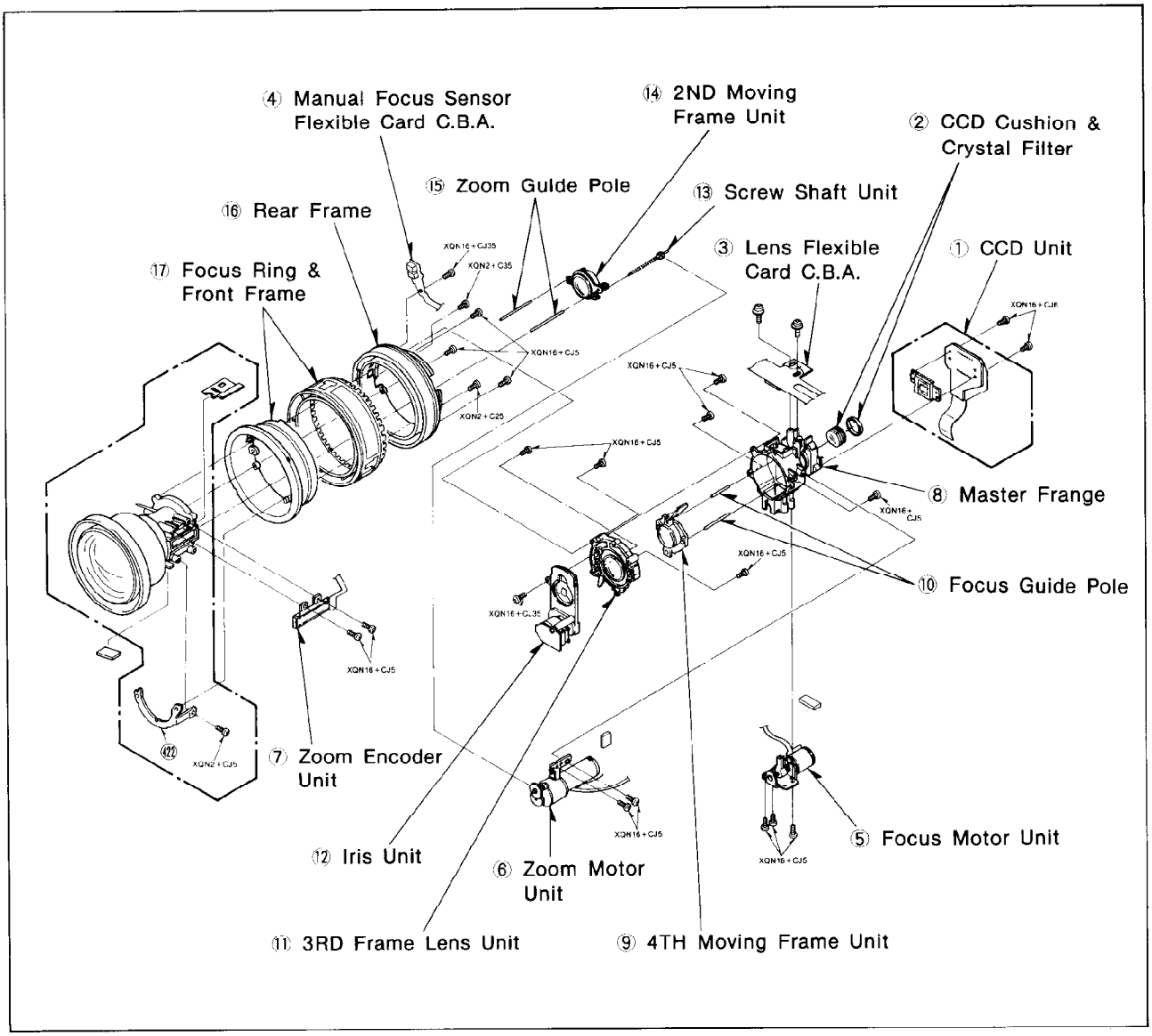

④ Manual Focus Sensor Flexible Card C.B.A.
⑭ 2ND Moving Frame Unit
② CCD Cushion & Crystal Filter
⑮ Zoom Guide Pole
⑬ Screw Shaft Unit
⑯ Rear Frame
③ Lens Flexible Card C.B.A.
① CCD Unit
⑰ Focus Ring & Front Frame
⑧ Master Frange
⑩ Focus Guide Pole
⑦ Zoom Encoder Unit
⑫ Iris Unit
⑤ Focus Motor Unit
⑥ Zoom Motor Unit
⑪ 3RD Frame Lens Unit
⑨ 4TH Moving Frame Unit

Fig. L2

2-4. ASSEMBLY ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the system control circuit,through the mode select switch.
Therefore the relation between the mode select switch and cam gear decides all further mechanical movement of the mechanical parts such as levers,gears,rollers and so on. If these parts are fixed improperly,the units will be unloaded or compulsory stopped.
And it will result being damaged at any mechanical or electrical parts.

2-4-1. ASSEMBLY PROCEDURES OF T-RAIL UNIT AND LOCK BASE.

(1). Install a T-Rail Unit and Lock Base Unit as shown in Fig. M1 and M2.

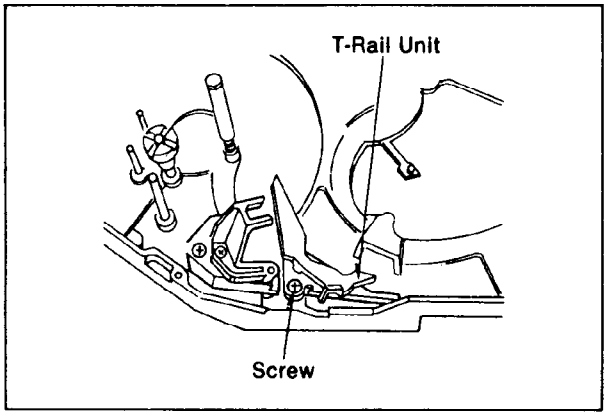


Fig. M1

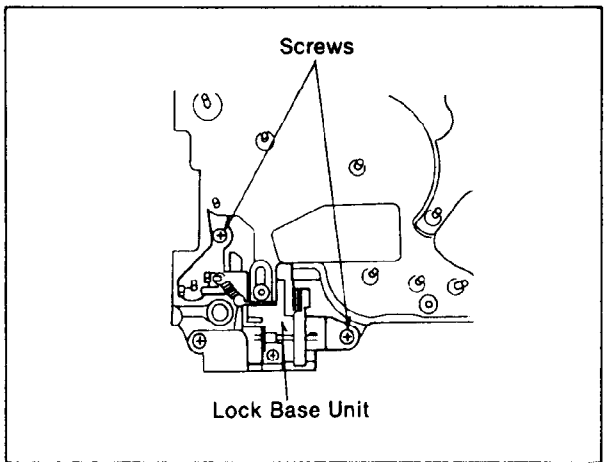


Fig. M2

2-4-2. ASSEMBLY PROCEDURES OF CAM GEAR AND ZENEBA GEAR

(1). Install a Cam Gear so that phase mark on the Cam Gear,with its point turned up,and then insert the Cut washer as shown in Fig.M3.

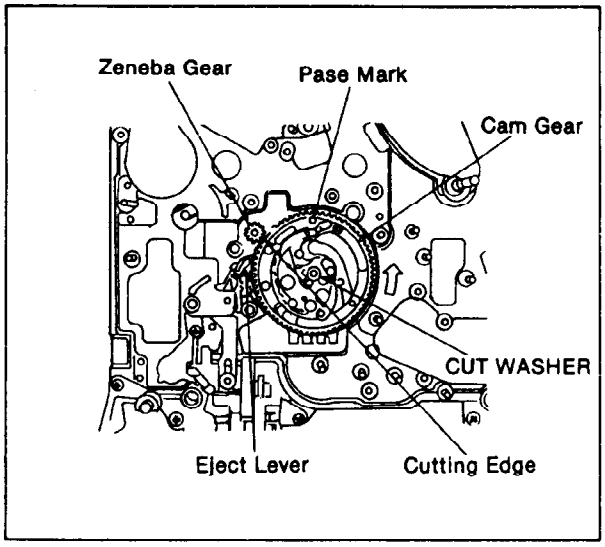


Fig. M3

NOTE:
If can't install the Cam Gear,Eject Lever caught on the Cam Gear.
The Cam Gear turn to the left for free from the Eject Lever and then install a Cam Gear.

(2). Install the Zeneba Gear so that cutting edge of the Zeneba Gear face to the Cam Gear as shown in Fig.M4.

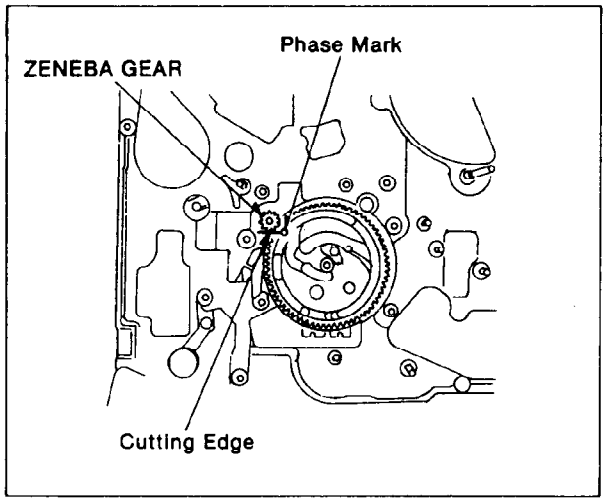


Fig. M4

NOTE:
When installation of the these Gears are finished,make sure that phase mark on the Cam on the Cam Gear face to the Zeneba Gear.

2-4-3. ASSEMBLY PROCEDURES OF S-BOARD UNIT AND GEAR

(1). Install the S-Board Unit as shown in Fig.M5.

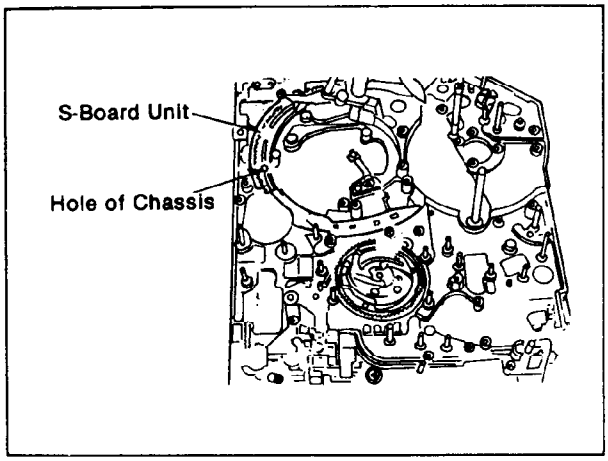


Fig. M5

NOTE
1: S-Board Unit contain the S-Rack,S-Rack Guide,S-Shaft Holder Unit and S2 Roller Post unit.

NOTE
2: The hole of S-Rack is exactly in line with the hole of chassis.

(2). Install the Loading Gear-S so that the hole of Loading Gear is exactly in with the hole of metal frame of Loading Gear S Unit as shown in Fig.M6.

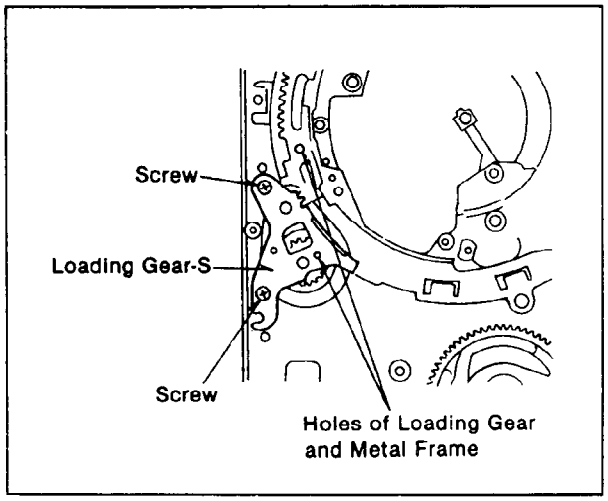


Fig. M6

2-4-4. ASSEMBLY PROCEDURES OF T-RACK GUIDE, T-RAIL, LOADING GEAR T2, LOADING GEAR T1, AND LOADING GEAR 5.

(1). Install the T-Rack Guide as shown in Fig.M7.

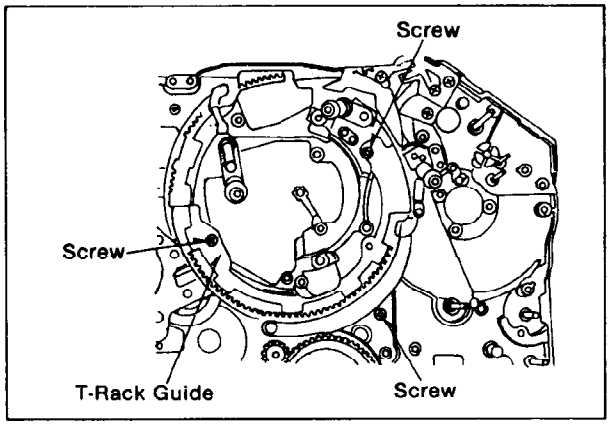


Fig. M7

(2). Install the T-Rail(R) Unit as shown in Fig.M8.

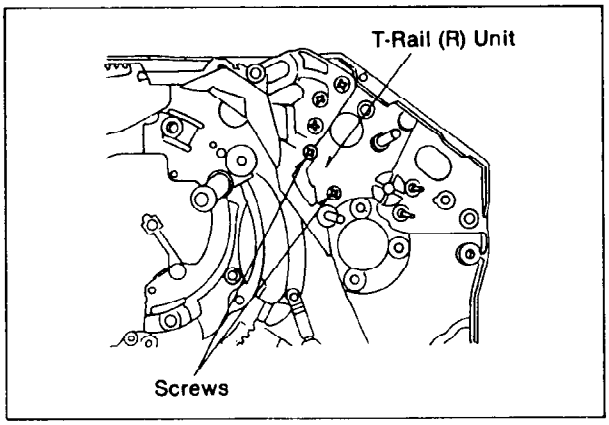


Fig. M8

(3). The 1st tooth on the T-Rack Guide face to the hole of Guide as shown in Fig.M9.

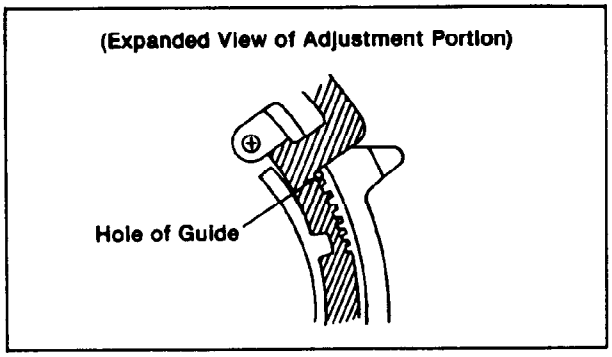


Fig. M9

(4). Install the Loading Gear-T2 so that the mark on the the Loading Gear T2 is exactly in line with the mark of Loading Gear S as shown in Fig. M10 and M11.

(5). Install the Loading Gear-T1 so that the mark on the Loading Gear-T1 is exactly in line with the hole of T-Rack Guide.

(6). Install the Loading Gear 5.

(7). Insert the Cut Washer to each Loading Gear when phase of each gears are collect.

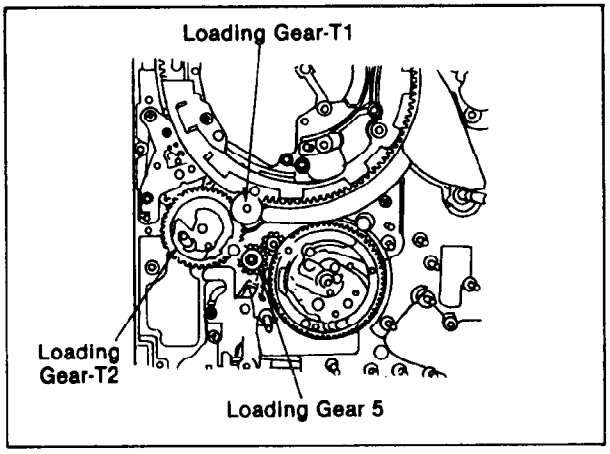


Fig. M10

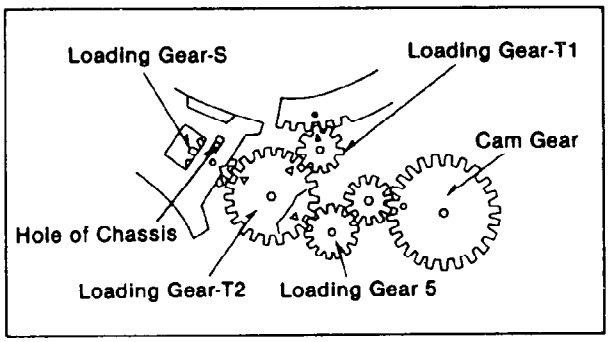


Fig. M11

2-4-5. ASSEMBLY PROCEDURES OF BAND GUIDE AND S-RAIL UNIT.

(1). Install the Band Guide and then insert the Cut Washer as shown in Fig.M12.

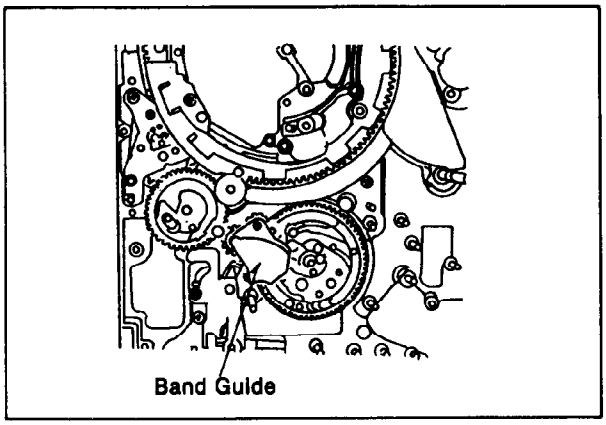


Fig. M12

(2). Install the S-Rail Unit and then tighten the 3-Screws as shown in Fig.M13.

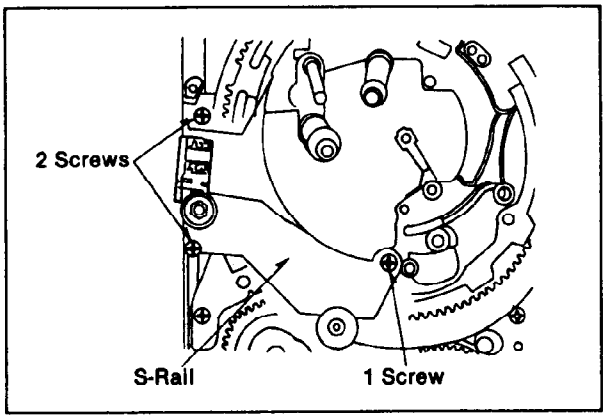


Fig. M13

2-4-6. ASSEMBLY PROCEDURES OF T-RAIL AND S-TV STOPPER.

(1). Install the T-Rail and then tighten the 3-Screws as shown Fig.M14.

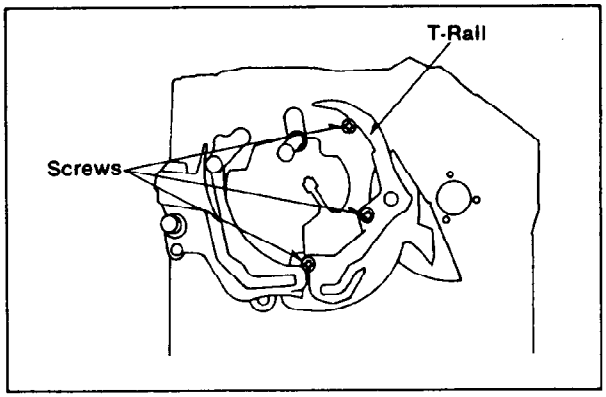


Fig. M14

(2). When installting of T-Rail finished,turn the Cam Gear to counter-clockwise that set the Roller Posts into stop position as shown in Fig. M15 and M16.

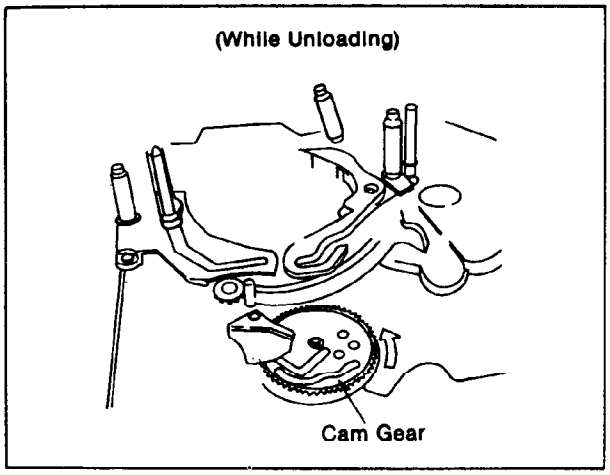


Fig. M15

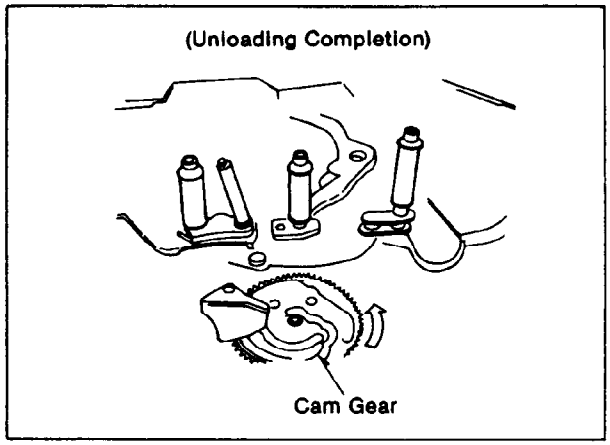


Fig. M16

NOTE:
Roller posts is made up of S2 Roller post, T-Roller Post,and Roller Post.

(3). Install the S-TV Stopper and then tighten the 2-Screws as shown in Fig.M17.

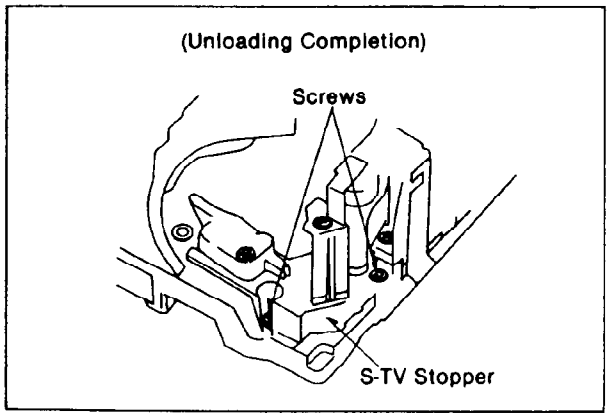


Fig. M17

NOTE:
Before install of the S-TV Stopper,install the the Impedance Roller unit into the S-TV stopper.

2-4-7. ASSEMBLY PROCEDURES OF SECTOR GEAR AND PINCH ARM UNIT

(1). Install the Sector Gear so that insert the pin of Sector Gear in the ditch on the Cam Gear.
And insert the Pin to the Sector Gear from the Mechanism chassis as shown in Fig.M18.
After that,install the 2-Springs.

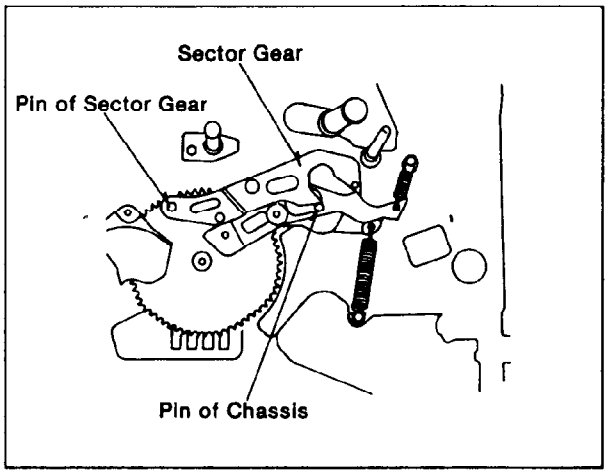


Fig. M18

(2). When the installating of the Sector Gear is finished,turn the Cam Gear to clockwise that set the Mechanism to play position(loading end) as shown in Fig.M19.

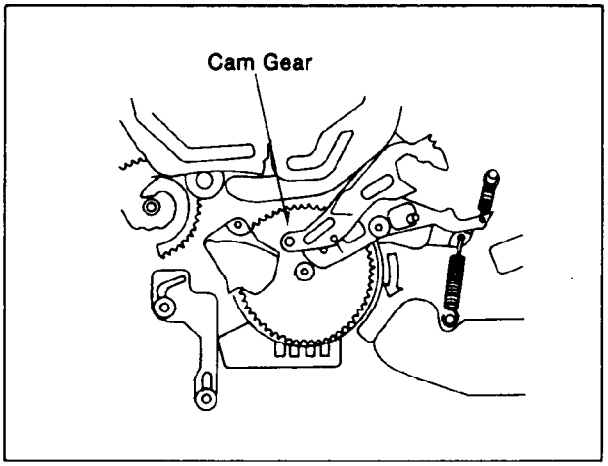


Fig. M19

(3). Install the Pinch Arm Unit,and then insert the E-Ring as shown in Fig. M20 and M21.

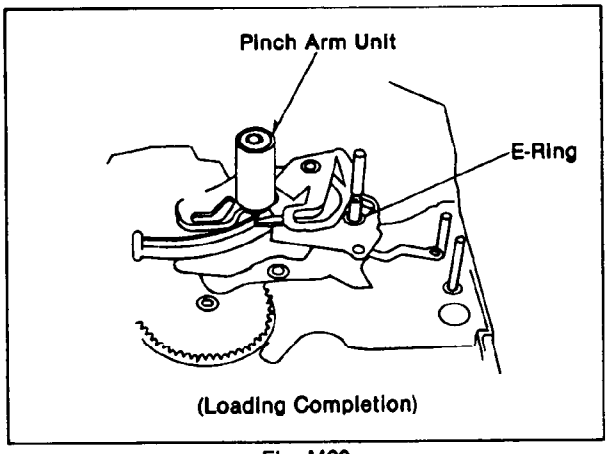


Fig. M20

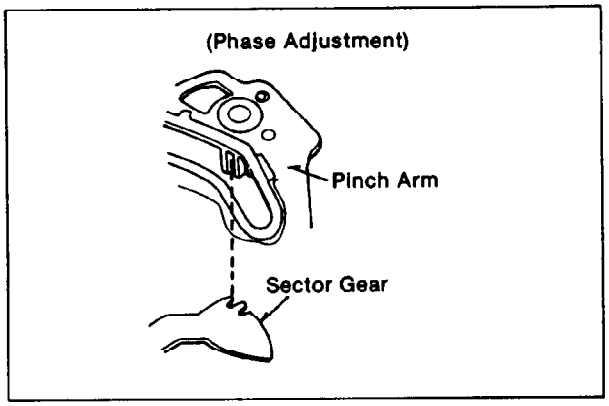


Fig. M21

(4). Insert the T1-returner Spring so that insert a hooked end(short side) in the hole of the Pinch Arm Base as shown in Fig.M22.

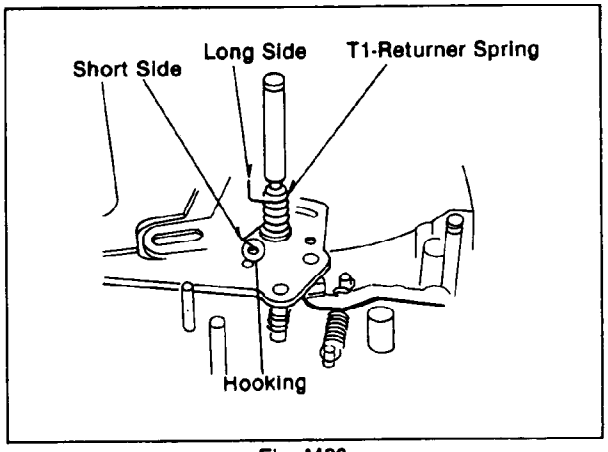


Fig. M22

(5). Make sure of up side of T1-Returner,after that install the T1-Returner.
Then insert hooked end(long side) of T1-Returner Spring in the hole of T1-Returner.
Then,turn the T1-Returner to clockwise.
Finally,insert the E-ring as shown in Fig.M23.

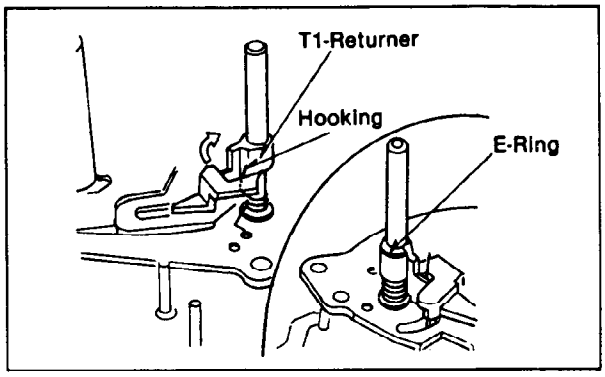


Fig. M23

(6) Fix the Tape Opener as shown in Fig.M24.

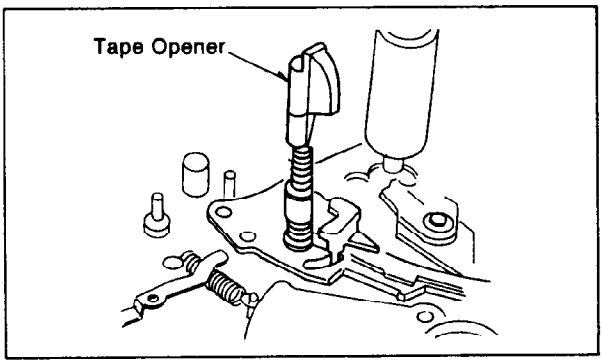
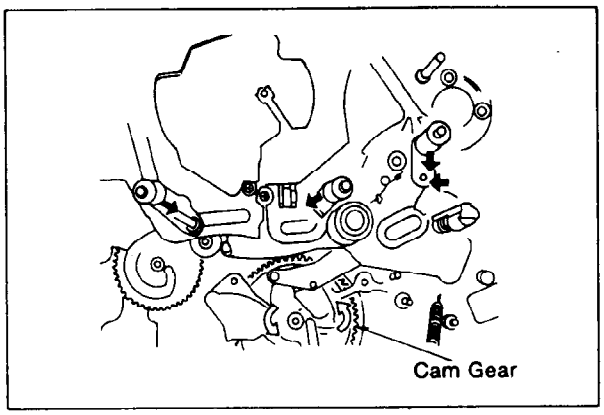


Fig. M24

2-4-8. ASSEMBLY PROCEDURES OF T-LUTCH GEAR AND DRIVE GEAR.

(1). Turn the Cam Gear to counterclockwise that set the Mechanism to stop position(unloading end)as shown in Fig.M25.



(2). Install the T–Clutch gear and then insert the Cut Washer,after that install the Drive Gear D, C and A.

And then insert the Cut Washer to the each Drive Gears as shown in Fig.M26.

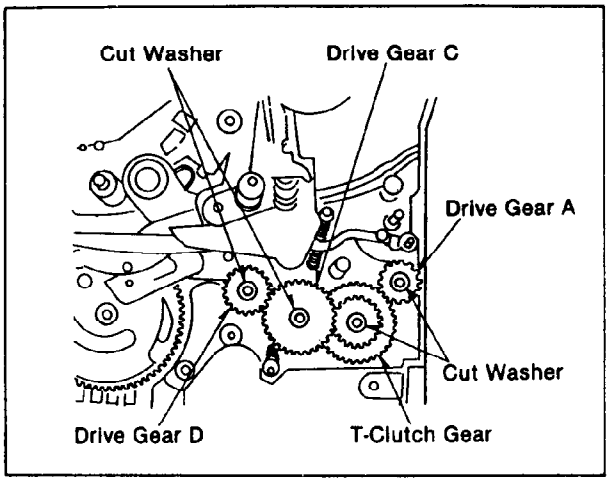


Fig.M26

2-4-9. ASSEMBLY PROCEDURES OF LOADING MOTOR AND LOADING GEAR 2, 3, 4.

(1). Install the Loading Motor Unit and tighten the 2 Screws as shown in Fig.M27.

(2). Install the Loading Gear 4 as shown in Fig. M27

(3). insert the washer and then install the Loading Gear 2.

(4). Insert the washer,then install the loading Gear 3.

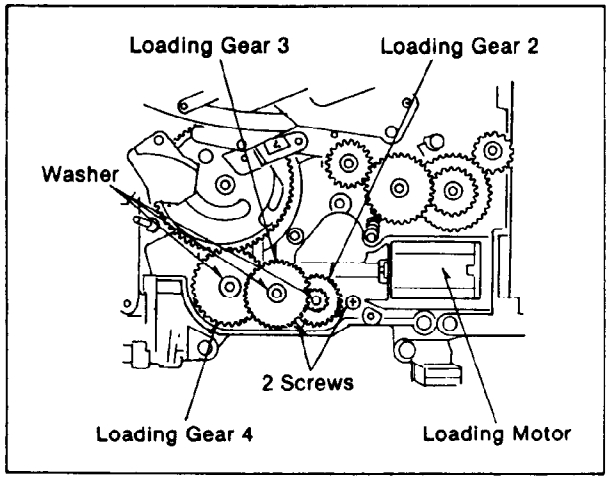


Fig. M27

NOTE : Up side of Loading Gear 4 has rib on inside circle.

2-4-10. ASSEMBLY PROCEDURES OF PULLEY PLATE UNIT AND PULLEY.

(1). Install the Pulley Plate and then tighten the 2 Screws as shown in Fig.M28.

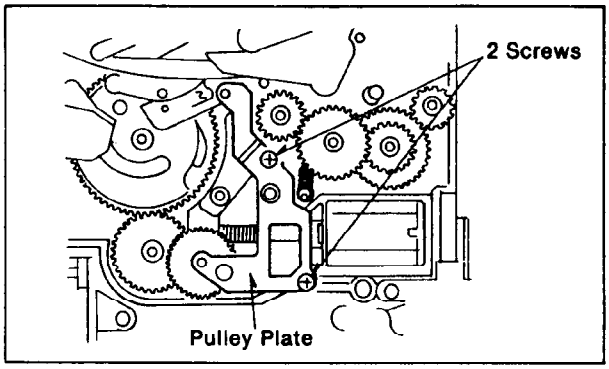


Fig. M28

(2). Insert the Washer and the pulley from reverse side of chassis,after that install the pulley cap as shown in Fig.M29.

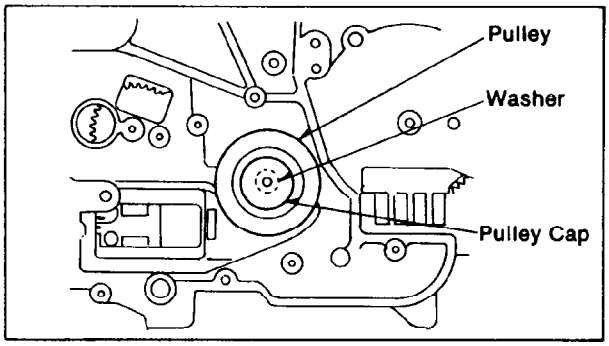


Fig. M29

2-4-11. ASSEMBLY PROCEDURES OF CORRECTOR DRIVE ARM UNIT AND CORRECTOR A, CORRECTOR C.

(1). Insert the washer to point c and install the Corrector Drive Arm.
And then insert the Cut Washer as shown in Fig.M30.

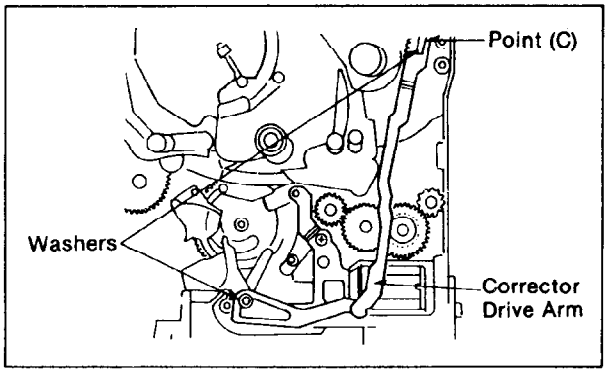


Fig. M30

(2). Install the Corrector (A) so that the first tip of Corrector Drive Arm comes to first tip of Corrector (A).
After that set a spring in the Corrector (A).
And then insert the Cut Washer to mount it as shown in Fig.M31 and M32.

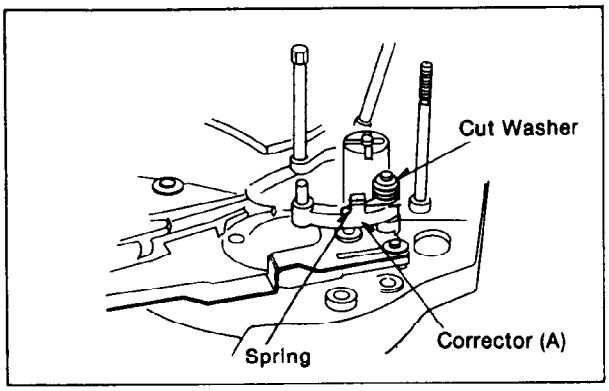


Fig. M31

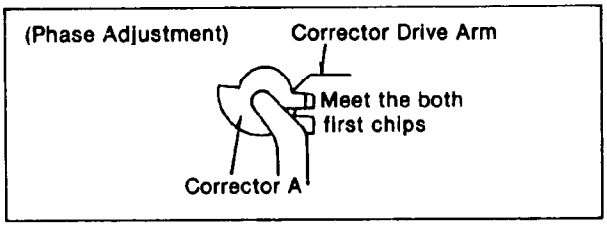


Fig. M32

(3). Install the Corrector C and the set a Spring in the Corrector C.
After that insert the Cut Washer to mount it as shown in Fig.M33.

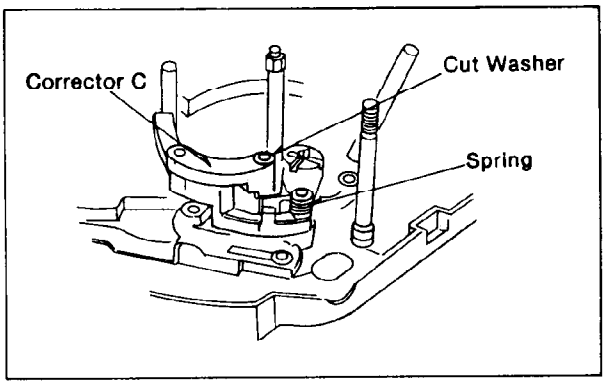


Fig. M33

2-4-12. ASSEMBLY PROCEDURES OF CENTRE GEAR AND T5 ARM

(1). Insert the Washer and then install the Centre Gear.
After that insert the Cut Washer to mount it as shown in Fig.M34.

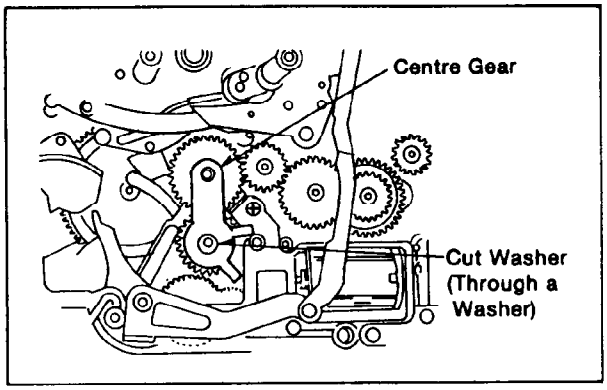


Fig. M34

(2). Insert the T5 Arm Spring and then install the T5 Arm.
The T5 Arm connect to the Center Gear.
After that insert the E Ring to mount it.

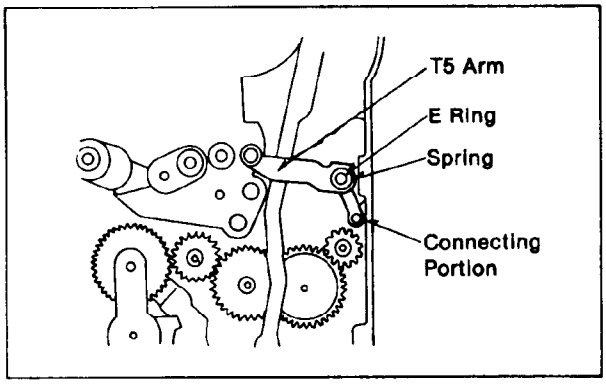


Fig. M35

2-4-13. ASSEMBLY PROCEDURES OF TENSION REGULATOR UNIT AND SUPPLY REEL TABLE.

(1). Insert the Washer and then install the Tension Regulator Unit so that the Tension Band Arm of Tension Regulator Unit connect to the Loading Gear.
fter that insert the Cut Washer as shown in Fig.M36.

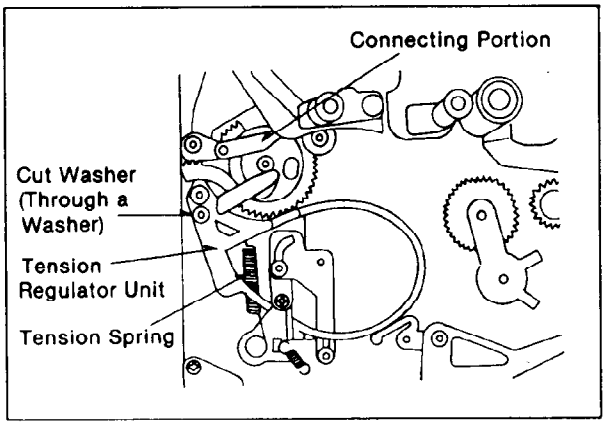


Fig. M36

(2). Set the Tension Spring in the Lock Base Unit.

(3). Insert the Washer and then install the Tension Arm so that make sure of phase between the
Tension Arm and Tension Band as shown in Fig.M37.
After that insert the Cut Washer to mount it.

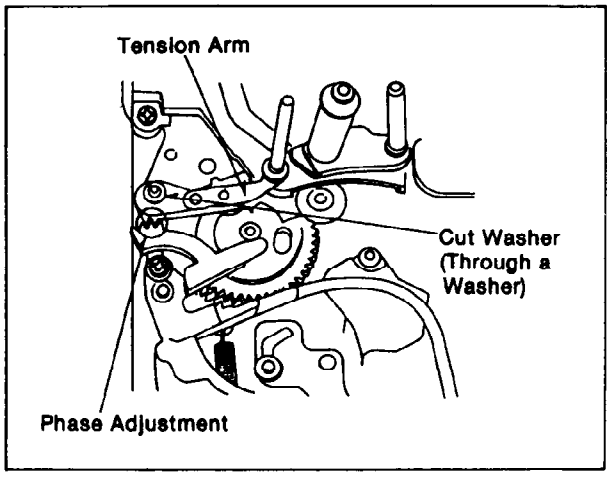


Fig. M37

(4). Insert the Washer and then install the Supply Reel Table,after that insert the Cut Washer to mount it.

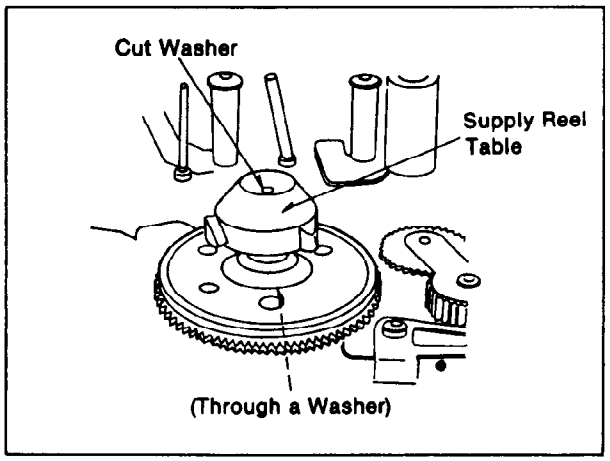


Fig. M38

2-4-14. ASSEMBLY PROCEDURES OF A/C HEAD AND CAPSTAN MOTOR UNIT

(1). Install the A/C Head Spring and the A/C Head.

(2). Tighten the hight Adjustment Screw for A/C Head.

NOTE:
Specification of Hight Adjustment of A/C head is as same as interchangebility adjustment.

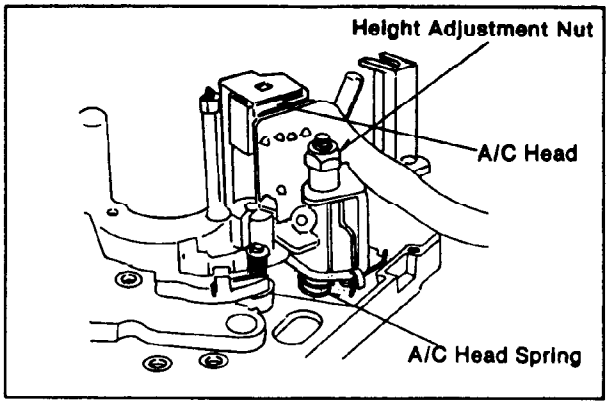


Fig. M39

(3). Install the Capstan Motor and the tighten the 3 screws as shown Fig.M40.

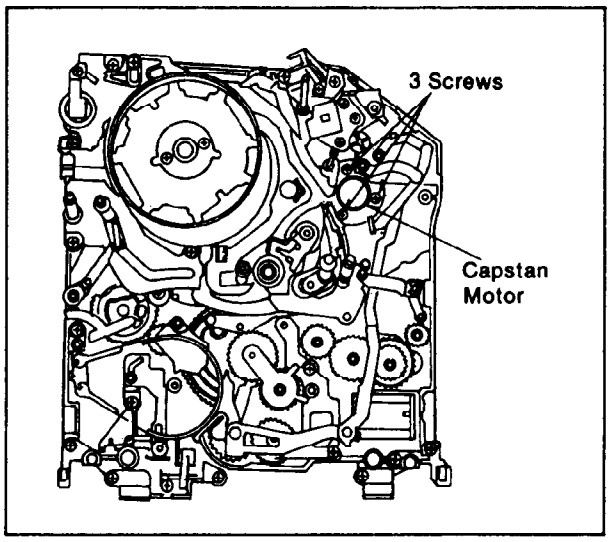


Fig. M40

2-4-15. ASSEMBLY PROCEDURES OF CYLINDER UNIT

(1). Install the Cylinder unit from the top side. and then tighten the 3–Screws as shown Fig.M41.

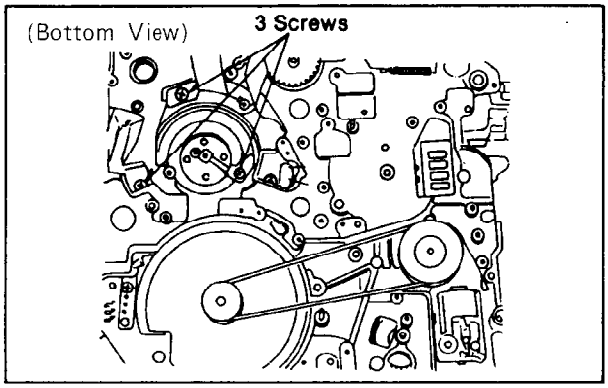


Fig. M41

2-5. INTERCHANGEABILITY ADJUSTMENT

2-5-1. ADJUSTMENT OF BACK TENSION

*Equipment Required
Tension meter
Alignment tape (VFM8180HUPF)
Specification 17+−2g.

(1) Remove the Impedance Roller.
(2) Insert the cassette tape and playback the tape.
(3) Insert the Tension Meter to Mechanism as shown Fig.T1.

If Back tension is high, spring position change to (a) position as shown in Fig.T2.
If Back tension is low, spring position change to (c) position as shown in Fig.T2.

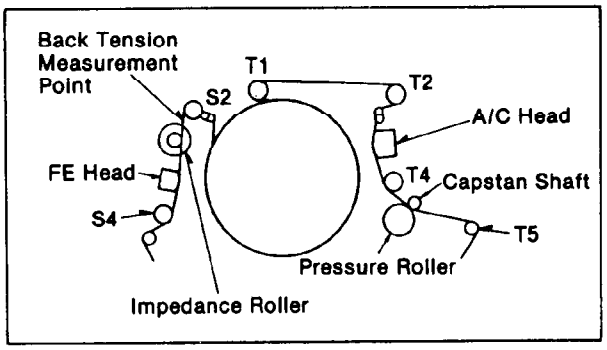


Fig.T1

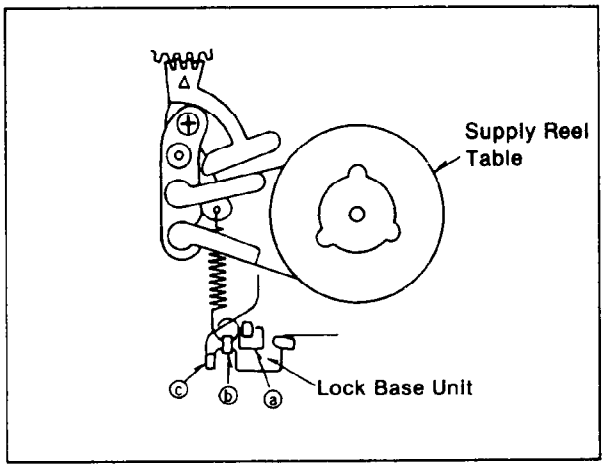


Fig.T2 S-REEL TABLE LOCK.BASE UNIT

(4) After check the Back tension, install the impedance Roller.

2-5-2. HEIGHT ADJUSTMENT OF TAPE GUIDE POST (PRELIMINARY ADJUSTMENT)

Height adjustment of S4 Post, T4 POST, T5 Post specification.

S4 Post: 17.125+−0.025mm
T5 Post: 17.175+−0.025mm
T4 Post: 17.175+−0.025mm

(1) For adjustment S4 Post height, turn 4mm Nut(A) Slightly in either direction as necessary to the correct clearance between the upper edge of lower tape guide on S4 Post and lower portion of Mecha chassis as shown in Fig.T3.

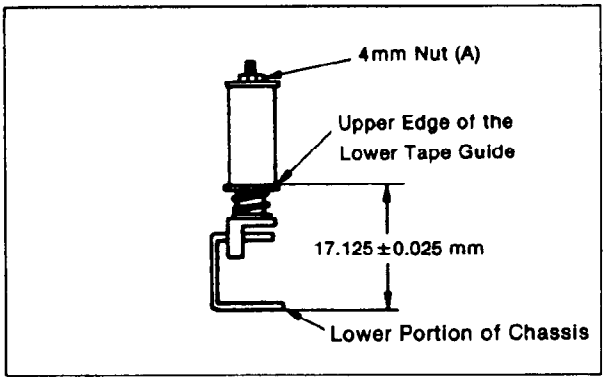


Fig. T3

Confirmation of Tape Travel

(1) Playback a cassette tape and confirm that the tape travels without curling at upper and lower guides on posts T4, T2, S4 and S2 as shown in Fig.T4.

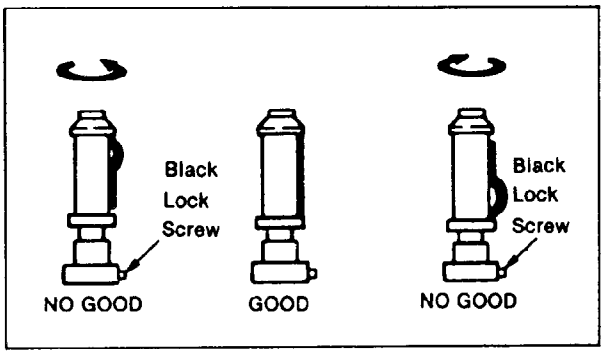


Fig. T4

(2) If curling is apparent adjust the height of posts by turning the top of post with Hex Wrench.

Note:
Before turning S2 and T1, slightly loosen the Black Lock Screw using the Screw Driver.

2-5-3. TAPE INTERCHANGEABILITY ADJUSTMENT

NOTE:
1) To perform these adjustment / confirmation procedures make sure that the Tracking Control is set in fixed position by pushing both of the Tracking Control Up/Down switches simultaneously.
2) **Before these adjustment/confirmation procedures,remove the cassette protective tape cover from a cassette tape or the Alignment tape (VFM8180HUPF).**

*Equipment Reqaired
Dual Trace Oscilloscope
Alignment tape (VFM8180HUPF)

2-5-4. CONFIRMATION OF TAPE TRAVEL

(1) Confirmation of A/C Head. This confirmation is required when the A/C Head or capstan Motor is replaced and for preliminary height adjustment
(2) Looking at the lower edge of the Control Head with the tape in motion, ensure that lower edge of the tape runs 0.25mm above the lower edge of Control Head. If it doesn't turn the A/C Head Height Adjustment Nut slightly in either direction as necessary to correct it.

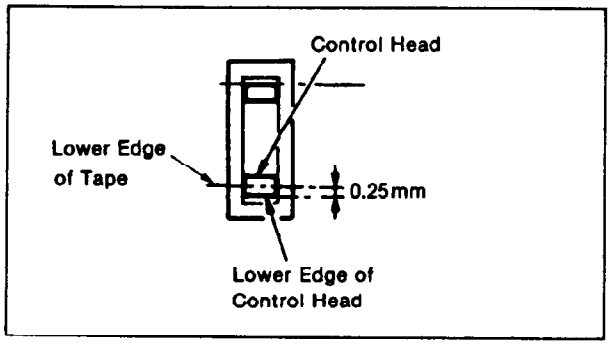


Fig.T5.

2-5-5. AZIMUTH ADJUSTMENT OF A/C HEAD.

(1) Connect the oscilloscope to Audio Line Output.
(2) Playback the Monoscope portion(6KHz, Mono) of the Alignment Tape.
(3) Adjust the Azimuth Adjustment Screw on the A/C Head Base as shown in Fig.T6 so that output level is at a maximum.

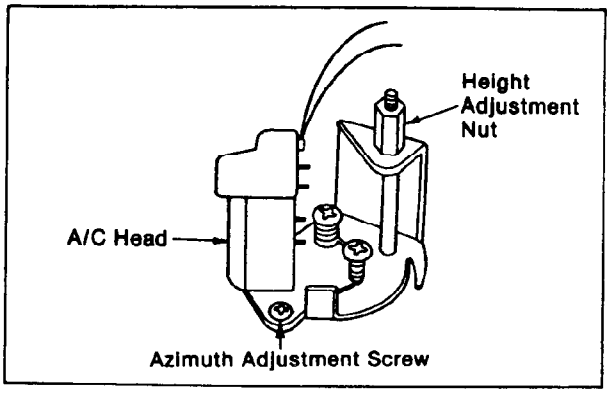


Fig. T6

2-5-6. HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

(1) Set the Tracking Control to the fixed position by pushing both of the Tracking Control Up/Down switches simultaneously.
Connect the oscilloscope to TP8002.
(2) Playback the monoscope portion of the alignment tape and confirm that RF envelope appears as show Fig. T7

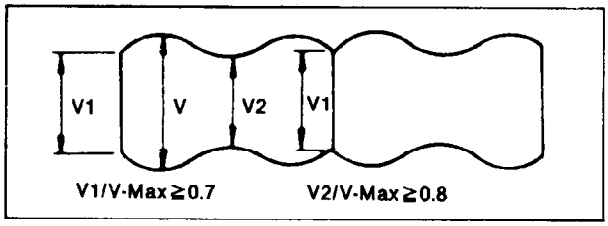


Fig. T7

(3) If adjustment is required, slowly move the A/C Head Base back and forth using the H-Position adjustment screwdriver(VFK0743) by turning screw(D) so that envelope is at a maximum.

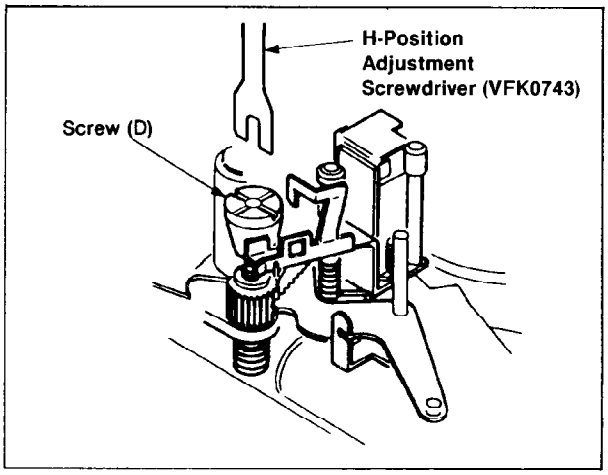


Fig. T8

(4) Confirmation of the correct adjustment can be made by alternately pushing the Tracking Control Up/Down Switches, to check the symmetry of the envelope.
(5) Reconfirm the symmetry of the envelope. If it has changed, repeat step(3) and (4).

2-5-7. CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

(1) Set the Tracking Control to the fixed position by pushing both of the Tracking Control Up/Down Switches simultaneously, connect the Oscilloscope to TP8002.

(2) Playback the Monoscope portion of the Alignment Tape and adjust the height of posts S2, T1 posts watching the scope display so that the envelope becomes as flat as possible. (V1/V-MAX>=0.7, V2/V-MAX>=0.8)
If adjustment is required, turn top of post with Hex, wrench for adjustment of S2 and T1.

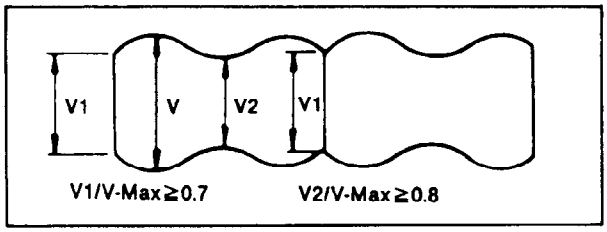


Fig. T9

(3) When the scope display is shown in Fig. T10 adjust the heihgt of S2 so that the wave looks like Fig.T12.

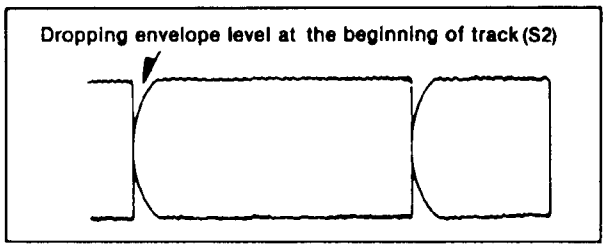


Fig. T10

(4) When the scope display is shown in Fig.T11. adjust the height of T1 so that the wave looks like Fig.T12.

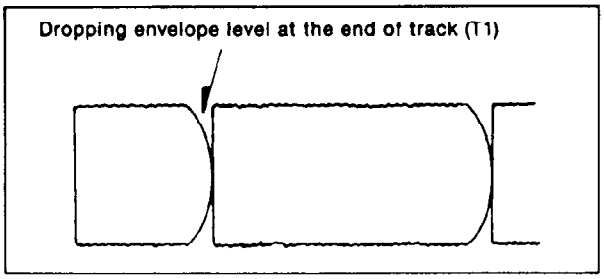


Fig. T11

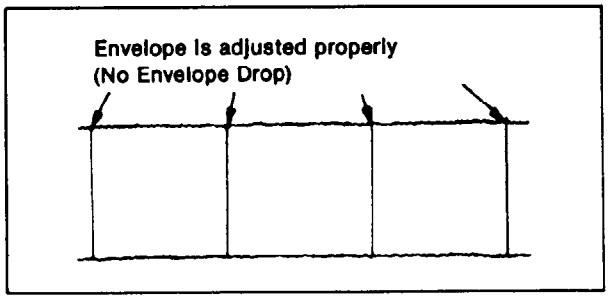


Fig. T12

2-6. ELECTRICAL ADJUSTMENT PROCEDURES

2-6-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the CAMERA section.

1. Oscilloscope
   Dual Trace, 50MHz, 2mV/DIV
   10:1 Probe
   1:1 Probe
2. Digital Volt Meter or VTVM
3. Frequency Counter
4. Vectorscope
5. Light Meter
6. Tripod
7. Colour Video Monitor
8. Lighting
   140 foot-candles(1400lux). on the chart surface 3200 degrees K.
9. Reflection Chart.
   * Logarithmic Gray Scale chart.
   * Colour Chip Chart.
   * Hunting Chart.
     (Part No.:VFK0546)
   * White Chart.
     (Part No.:VFK0546)
   * J Chart & Ball Chart.
     (Part No.:VFK0580)
   * B/W Chart.
     (Part No.:VFK0546)
   * Gray-White Chart.
     (Part No.:VFK0546)
   * Colour Bar Chart.
     (Part No.:VFK0677)
10. Plastic Tip Driver.
11. E.V.R. FIXTURE (Part No.:VFK0644)
    * ROM5 (Part No.:VFK0701ROM5)

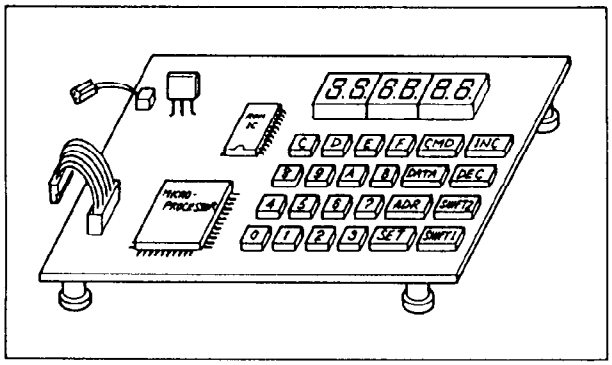


Fig. C1

12. Colour Temperature Conversion Filter

    * C12 Filter (Part No.:VFK0713)
    * C2 Filter (Part No.:VFK0716)
    * C8 Filter (Part No.:VFK0714)

13. Camera Extension Cables

    * Extension Cable (18P)(Part No.:VFK0698)
    * Extension Cable (30P)(Part No.:VFK0667)
    * Extension Cable (13P)(Part No.:VFK0672)
    * 22 PIN E.V.R. CONNECTION CABLE (22P) (Part No.:VFK0699)
      Following Extension Cables can be used for VTR section too.
    * FLAT Cable (18P)(Part No.:VFK0670)
    * Extension Cable (24P)(Part No.:VFK0668)
    * FLAT Cable (24P)(Part No.:VFK0802)
    * FLAT Cable (14P)(Part No.:VFK0803)

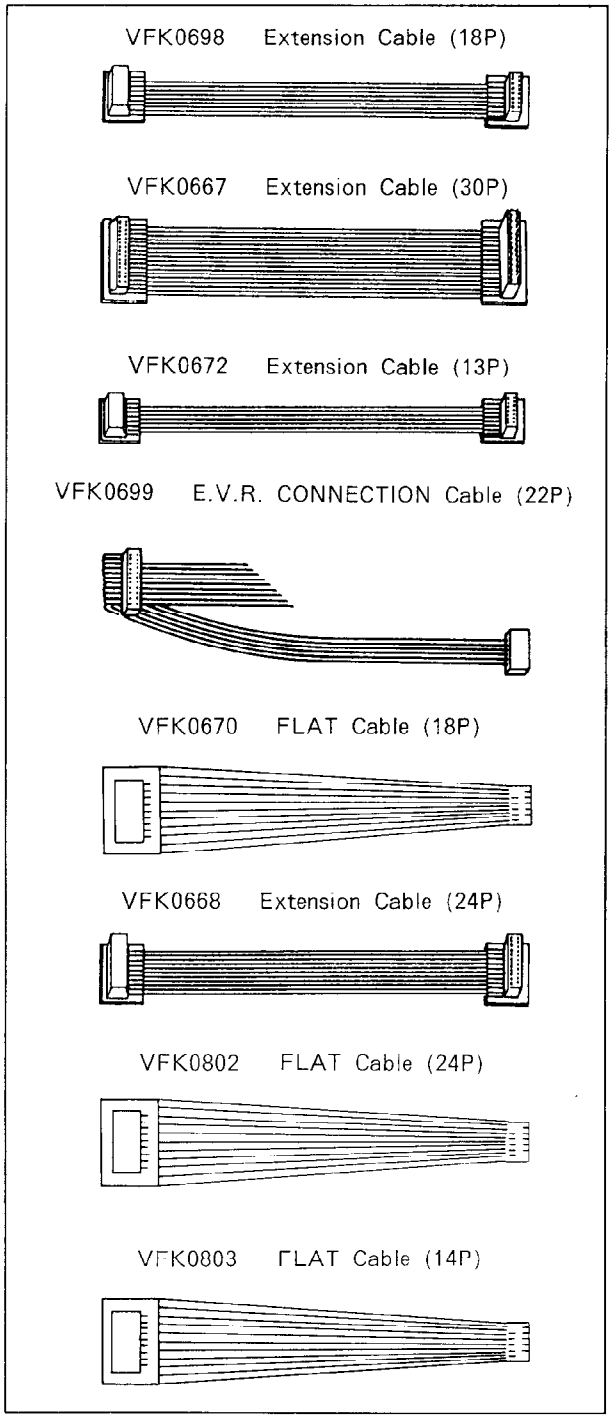

VFK0698 Extension Cable (18P)
VFK0667 Extension Cable (30P)
VFK0672 Extension Cable (13P)
VFK0699 E.V.R. CONNECTION Cable (22P)
VFK0670 FLAT Cable (18P)
VFK0668 Extension Cable (24P)
VFK0802 FLAT Cable (24P)
VFK0803 FLAT Cable (14P)

Fig. C2

PREPARATION

1) Remove both side case (R) and (L) referring disassembly method in service manual.
2) Connect the E.V.R. FIXTURE and measuring equipment as shown in Fig.C3.
3) Select the mode selector on E.V.R. Fixture to "B" side. (Refer to Fig.C5)
4) Turn the power SW of E.V.R. Fixture on.
5) Turn the power SW of Camcorder NV-G202/G220 on.
   LED Display on E.V.R. Fixture should indicate "01 80 00" If not, Push RESET button or check the Cable Connections between EVR and CAMERA.
   * In this time, Picture is appeared on TV monitor.
   (If Error indication appear, refer to Error indication which is described later)
6) At the time of manufacture all EEPROMs in camcorder are set for "Writing inhibit condition".
   As long as this condition is not released, camera adjustment can not be performed.
   In order to release this condition.
   (Push [SHIFT] + [C] keys together.)

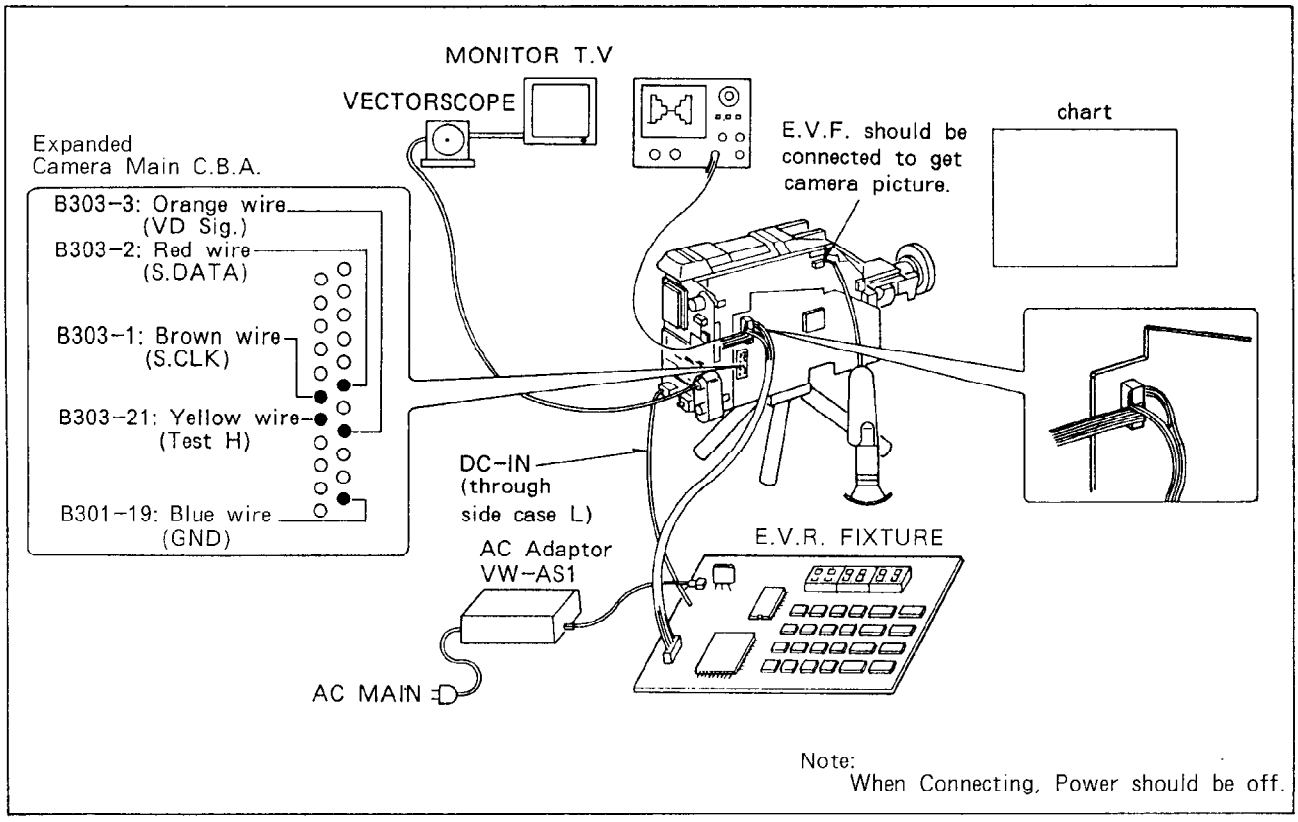


Fig. C3

(Description of Command)

Selecting the communication mode for the type of data exchange to be performed between EVR Fixture and camcorder.

Command	Communication	Contents
01	EVR Fixture → D/A converter	Data transmission from EVR to address of D/A converter.
02	EVR Fixture → EEPROM	Writing the data to address of EEPROM.
03	EEPROM → D/A converter	——
04	EEPROM → EVR Fixture	Reading out the data of EEPROM.
05	A/D→EVR Fixture	Data transmission of A/D convertion to EVR.

Fig. C4

(Error Indication)

If something error is happening while EVR is working EVR indicates the error message which are mentioned in Fig.C5 for 2 seconds and then return to previous indication.

Error NO.	Contents of Error	Simple checking method
0	Command of except "01"~"06" is set	
1	VD signal from camera is not coming.	lead wire of TP may be cut out
2	Communication with camera is not syncronized.	lead wire of TP may be cut out
3	Writing error in the EEPROM of camera.	Check with command "01" and. [SHIFT 1] + [C] (Releasing the writing Protection)

Fig. C5

(SHIFT1 / SHIFT2 COMMAND)

The following operations are provided to transfer the data by one touch.

<table>
<tr><th>NO.</th><th>Buttons to be pushed
(Push these together)</th><th>Operations</th></tr>
<tr><td>1</td><td>SHIFT 1 + 0</td><td>Making IRIS fully open.</td></tr>
<tr><td>2</td><td>SHIFT 1 + 1</td><td>Making IRIS fully close.</td></tr>
<tr><td>3</td><td>SHIFT 1 + 2</td><td>Making AGC GAIN minimize.</td></tr>
<tr><td>4</td><td>SHIFT 1 + 3</td><td>Making AGC GAIN maximize.</td></tr>
<tr><td>5</td><td>SHIFT 1 + 4</td><td>FADE ON</td></tr>
<tr><td>6</td><td>SHIFT 1 + 5</td><td>FADE OFF</td></tr>
<tr><td>7</td><td>SHIFT 1 + 6</td><td>Changing the High Speed Shutter mode.
* Push the SHIFT 1 + 6 repeatedly to select the desired shutter speed.
E.V.R indicates the mode number of High Speed Shutter at the address digits a moment, detail as follows.)
<table>
<tr><th>ADDRESS LED INDICATION</th><th>MODE</th><th>ADDRESS LED INDICATION</th><th>MODE</th></tr>
<tr><td>0</td><td>Normal mode.</td><td>4</td><td>1/1000 mode</td></tr>
<tr><td>1</td><td>1/120 mode</td><td>5</td><td>1/2000 mode</td></tr>
<tr><td>2</td><td>1/250 mode</td><td>6</td><td>1/4000 mode</td></tr>
<tr><td>3</td><td>1/500 mode</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>SHIFT 1 + 7</td><td>Switching the Auto/Manual Focus.
* Push the SHIFT 1 + 7 repeatedly to select the desired shutter speed.
E.V.R indicates the mode number of High Speed Shutter at the address digits a moment, detail as follows.)
<table>
<tr><th>ADDRESS LED INDICATION</th><th>MODE</th></tr>
<tr><td>0</td><td>Manual Focus mode.</td></tr>
<tr><td>1</td><td>Auto Focus mode.</td></tr>
</table></td></tr>
<tr><td>9</td><td>SHIFT 1 + B</td><td>Writing protection of EEPROM on. (Data writing can not be performed/write inhibit)</td></tr>
<tr><td>10</td><td>SHIFT 1 + C</td><td>Releasing the writing protection. (Data writing can be performed)</td></tr>
<tr><td>11</td><td>SHIFT 1 + D</td><td>IRIS and AGC are returned to original condition (AUTO).</td></tr>
<tr><td>12</td><td>SHIFT 2 + 2</td><td>Writing the fixed data and all average data into EEPROM.
(Refer to Fig. C8)</td></tr>
<tr><td>13</td><td>SHIFT 2 + 3</td><td>Automatic calculation for colour reproduction and writing its data into EEPROM.
(Refer to Fig. C41)</td></tr>
<tr><td>14</td><td>SHIFT 2 + 4</td><td>Automatic calculation for colour detection and writing its data into EEPROM.
(Refer to Fig. C42)</td></tr>
<tr><td>15</td><td>SHIFT 2 + 5</td><td>Zooming to "TELE" position.</td></tr>
<tr><td>16</td><td>SHIFT 2 + 6</td><td>Stopping the zoom operation.</td></tr>
<tr><td>17</td><td>SHIFT 2 + 7</td><td>Zooming to "WIDE" position.</td></tr>
</table>

Fig. C6

(Standard Setting for Camera Adjustment)

Unless specified, switches are set to following position.

1) Camera Mode Selector Switch.....MANUAL

   White Balance Switch.....INDOOR
   (When connecting the E.V.R Fixture, White Balance Switch is set to indoor mode automatically.)
   Auto Focus.....AUTO
   High Speed Shutter.....OFF
   Fade.....OFF
   DIGITAL TITLE MEMORY.....OFF
   These are set automatically after turning power SW to ON.
2) Iris.....ALC condition
3) Use 3200 degrees kelvin light source for lighting.
4) To trigger the oscilloscope, use video output.
5) Service work for camera unit must be performed in a dust free location to maintain the lens cleanness.

HOW TO READ THE TABLE FOR ADJUSTMENT

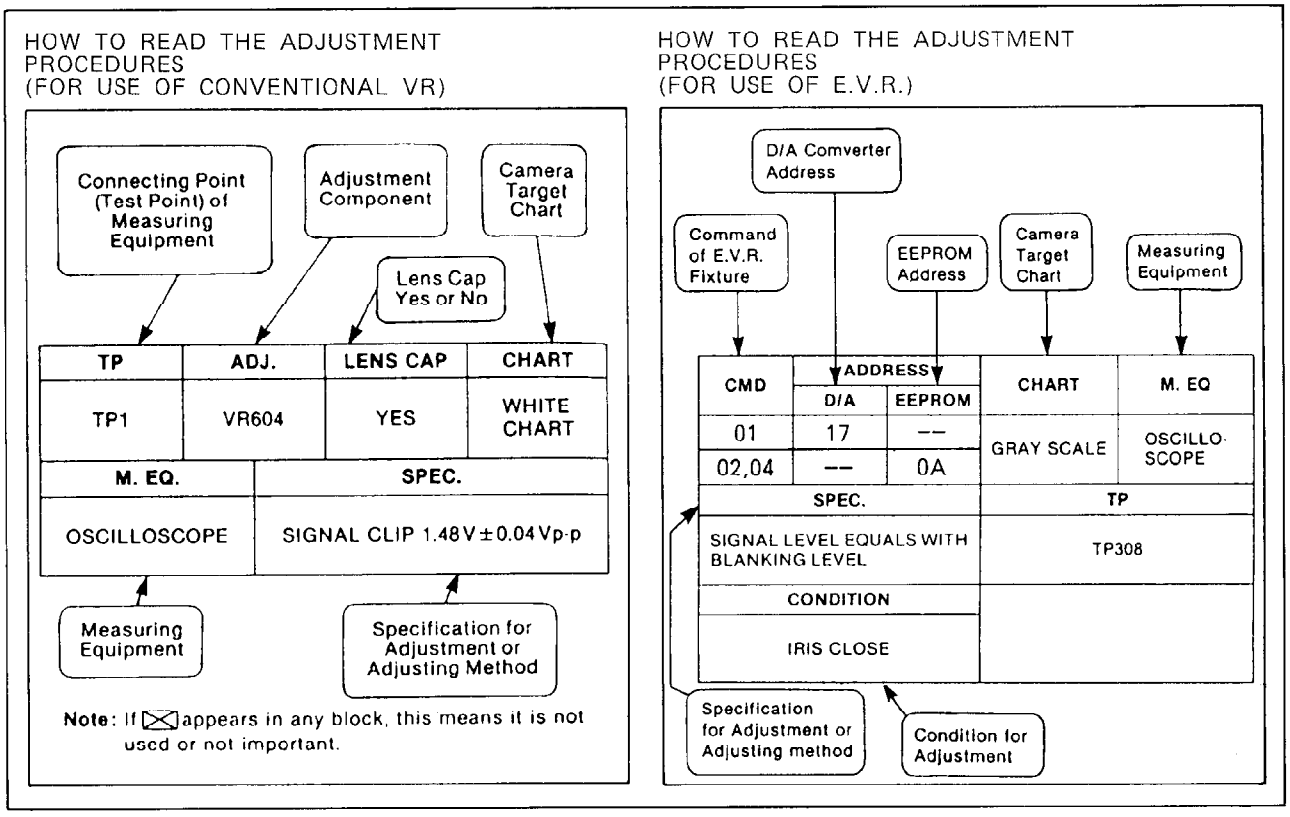


Fig. C7

[1] DATA WRITING FOR FIXED DATA AND AVERAGE DATA
(When replacing the EEPROM)

[Purpose]
To enter the proper data into empty EEPROM, because spare parts of EEPROM is empty (no data is stored).

[Symptom of Mis-enter]
Picture will not be appeared on TV monitor. (or not be correct picture)

[Note]
Beside replacing the EEPROM, Do not write fixed data and average data. (Do not perform this item)

(Automatic Writing)
1. Confirm that ROM of E.V.R is replaced with new one (Part No.:VFK0701ROM5).
2. Push [SHIFT2] + [2] keys together.
(Fixed data and all average data shown in Fig.C8 are written into EEPROM automatically.)

(Manual Writing)
You can also enter the data one by one manually using command "02".

For example:
Data input of address "00".

(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [0] keys)
(Push [DATA], [7], [F] keys)
(Push [SET] key)

(A) ADDRESS MAP OF FIXED DATA AND AVERAGE DATA

* The data surrounded by ▭ are fixed data.

UPPER / LOWER	0	1	2	3	4	5	6	7
0	VITC 11 LEVEL 7F	ZVREF 436 6A	S/H1G 28 55	FADETIME 1 6A	RWB HE 5F	FSDATA 1 04	RWB 31 42	BG 51 2B
1	NC 80	γ LEAK FF	S/H1G 31 55	MEMOSW1 00	RG HE 29	FSDATA 2 04	RG 31 23	BMAT 51 52
2	RPEDE 13 5E	ALCFC 32 8F	S/H1G 36 5B	MEMOSW2 00	RMAT HE 67	SEIGY 01 04	RMAT 31 5C	RWB 60 64
3	BPEDE 14 64	YADOFF2A 8B	S/H1G 51 4F	MEMOSW3 08	BWB HE 64	AWB Y31 6F	BWB 31 43	RG 60 29
4	CPEDE 15 C0	CADOFF 2C A1	S/H1G 60 8C	PROTECT 00	BG HE 2B	S/H1 31 5C	BG 31 38	RMAT 60 67
5	fH/2 16 64	270° ADJ33 BA	S/H1G MIX 59	DKHOLDLEV 10	BMAT HE 52	S/H2 31 3A	BMAT 31 50	BWB 60 6C
6	ALC 31 4F	BLEUEL 34 4B		FADETIME 2 32	S/H2 31 • 28 39	AWB Y51 6E	RWB 36 54	BG 60 2B
7	R 24 90	BPHASE 37 7C	S/H1M 28 FF	MEMOSW4 00	S/H2 28 • 31 3D	S/H1 51 68	RG 36 26	BMAT 60 52
8	CDSG 25 98	90° ADJ38 8D	S/H1M 31 FF	FADESPEED 80	S/H2 36 • 31 4B	S/H2 51 6A	RMAT 36 67	RWB Mix 5F
9	AGC 26 B4		S/H1M 36 7F	AWBY1 05 6F	S/H2 31 • 36 4F	IROHAN 1 04	BWB 36 45	RG Mix 29
A	PEDE 27 96	RWB 1N 40	S/H1M 51 AC	ROFFSET 03 8A	S/H2 51 • 36 64	RWB 28 42	BG 36 2F	RMAT Mix 67
B	EDGE 28 AC	RG 1N 10	S/H1M 60 BB	BOFFSET 04 83	S/H2 36 • 51 68	RG 28 20	BMAT 36 4B	BWB Mix 54
C	HC 29 84	RMAT 1N 00	S/H1M MIX 81	S/H1DK2 06 0E	S/H2 60 • 51 9E	RMAT 28 5C	RWB 51 5F	BG Mix 2B
D	VRPEDE 3C 84	BWB 1N 20	S/H1DK1 06 0B	S/H2DK2 16 06	S/H2 51 • 60 A8	BWB 28 43	RG 51 29	BMAT Mix 52
E	VBPEDE 3B 7F	BG 1N 0A	S/H2DK1 16 06		LUXROM 07	BG 28 34	RMAT 51 67	YDK1 05 19
F	VREF3 35 95	BMAT 1N 00		YDK2 05 13	ALCFDATA 02	BMAT 28 50	BWB 51 64	UNIT

Fig. C8

[2] FCK FREQUENCY ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TL520	C261		
M. EQ.		**SPEC.**	
FREQUENCY COUNTER		9.656250MHz + – 15kHz	

[Purpose]
CCD drive pulse adjustment.

[Symptom of Mis-adjustment]
Picture sync mis-operation.

[Note]
When making this adjustment, connect the extension cables. (Refer to Fig.C11)

[3] V-SUB ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR303	NO	Refer to Fig. C9
M. EQ.		**SPEC.**	
MONITOR TV		NO BLOOMING	

[Purpose]
High luminance overflow adjustment.

[Symptom of Mis-adjustment]
Colour loss.

(Initial Setting)
(1) Set the zoom to fully TELE position.
(Push [SHIFT2] + [7] keys together)
(2) Aim the camera at Halogen Lamp as shown in Fig.C9.
(3) Use frosted glass or acrylic plate to diffuse the light.
Put the cardboard cut as shown in Fig.C9 in front of the diffuses.
(4) Open the IRIS.
(Push [SHIFT1] + [0] keys together)

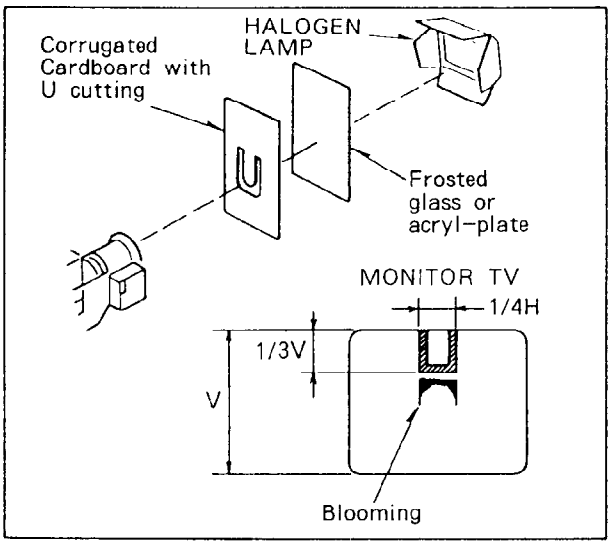


Fig. C9

(Adjustment)
(5) Adjust VR303 so that blooming just disappears.
If blooming is not disappeared completely, adjust VR303 until minimum blooming.
(Refer to Fig.C9)
(6) Set the High Speed Shutter to 1/250.
(Push [SHIFT1] + [6] keys together repeatedly until E.V.R indicates "2" at address digits.)
(7) Confirm that the monitored picture does not contain the blooming even if the camera moves shown in Fig. C10.

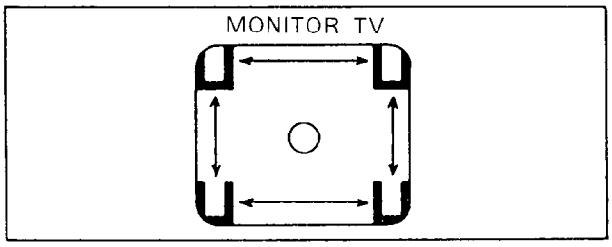


Fig. C10

(After adjustment)
(8) Set the High Speed Shutter to NORMAL.
(Push [SHIFT 1] + [6] keys together repeatedly until E.V.R indicates "0" at address digits.)

[4] HALL AMP ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
B303 – (4)	VR301 (GAIN) VR302 (BIAS)	NO	
M. EQ.		SPEC.	
D.V.M.		(IRIS CLOSE) Voltage at B303 – (4) = Voltage at B303 – (20) + – 20mV (IRIS OPEN) Voltage at B303 – (4) = Voltage at B303 – (19) + – 50mV	
CONDITION			
MANUAL FOCUS			

[Purpose]
Hall Amp adjustment.

[Symptom of Mis-adjustment]

Hunting occurs or the focus stop.

(Initial Setting)
(1) Set the focus to Manual Focus.
(Push [SHIFT1] + [7] keys together repeatedly until E.V.R indicates "0" at address digits.)

(Adjustment)
(2) Close the IRIS.
(Push [SHIFT1] + [1] keys together)
(3) Adjust VR302 so that the voltage at B303-(4) is voltage at B303-(20)+-20mV.
(4) Open the IRIS.
(Push [SHIFT1] + [0] keys together)
(5) Adjust VR301 so that the voltage at B303-(4) is voltage at B303-(19)+-50mV.

(After adjustment)
(6) Set the IRIS to AUTO.
(Push [SHIFT1] + [D] keys together)
(7) Set the focus to Auto Focus.
(Push [SHIFT1] + [/] keys together repeatedly until E.V.R indicates "1" at address digits.)

[5] FOCUS ENCODER & ZOOM ENCODER ADJUSTMENT (AFTER CHANGING LENS UNIT)

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	T : 25 W : 26		HUNTING CHART (DISTANCE: 1m)	DIGITAL VOLT METER
02		T : OF W : 10		
SPEC.			TP	
BEST FOCUS			B303 – (5) B303 – (18)	
CONDITION				
MANUAL FOCUS				

[Purpose]
Back Focus adjustment

[Symptom of Mis adjustment]
Lens System is not in focus through out all positions of Zoom range.

(Initial Measurement)
(1) Check the voltage at B303-(5) and B303-(18) before changing the defective lens unit.
(Example B303-(5) : 3.652V)
B303-(18) : 1.456V)
(2) Make note of the potential difference between B303-(5) and B303-(18).
(Example 3.652V-1.456V=2.196V)
(3) Turn off power SW.
(4) Replace lens unit.
(5) Prepare the unit using the extension cable as follows.

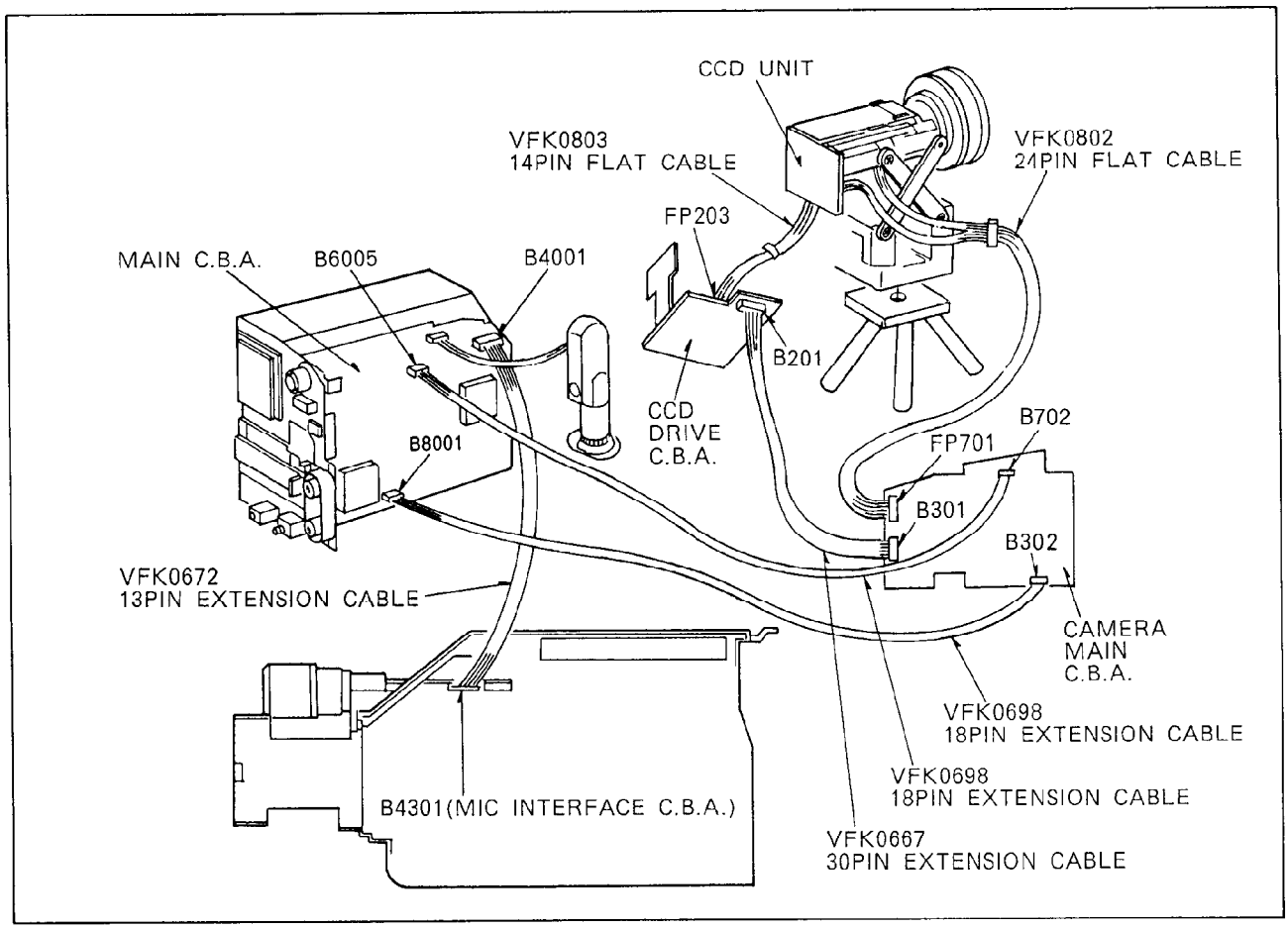


Fig. C11

(6) Loosen 2 screws of Focus Encoder C.B.A. and move the C.B.A. in centre position as shown in Fig.C12. Tighten 2 screws.

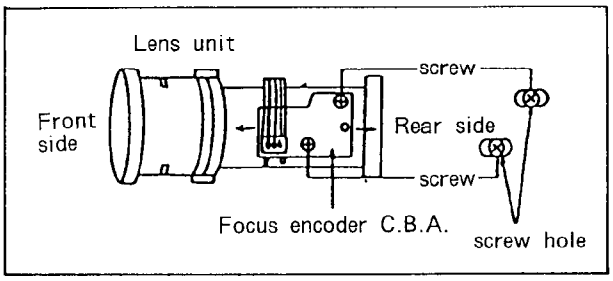


Fig. C12

(7) Turn on power SW.
(8) Set the focus system to Manual Focus. (Pushing [SHIFT1] + [7] keys Simultaneously switches the focus system between Manual and Auto focus, "0" displayed at address LED while [SHIFT1] + [7] keys are depressed indicates Manual Focus, "1" indicates Auto Focus.
(9) Zoom the lens to full Tele position. Push [SHIFT2] + [5] keys simultaneously.
(10) Aim the unit at Hunting Chart from a distance of 1 meter.
(11) Set the focus to full "–" position.
* Turn the focus ring counter–clockwise until the picture focus does not change.

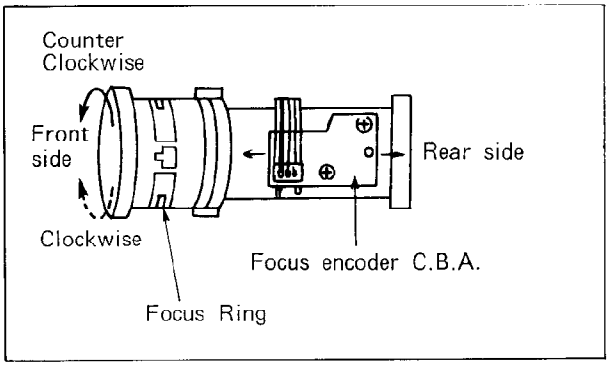


Fig. C13

(Adjustment for Tele Side)
(12) Push [CMD], [0], [1] keys.
(13) Push [ADR], [2], [5] keys.
(14) Push [INC] or [DEC] key until the lens focus is in correct position using the lowest data within the range of good focus.

[Note]
The focus does not change while focus voltage is being adjusted on the EVR. To see the focus adjustment, the lens unit must be zoomed from TELE to WIDE and back to TELE to activate the focus.

[Note]
Using the zoom controls on the EVR disables the zoom controls of TELE/WIDE button on the Camera.
Therefore, use EVR([SHIFT1] + [7] or [SHIFT1] + [5]) to move zoom for the TELE or WIDE position.

(14-1) When lens focus comes to in correct position(at TELE side), store the data as follows,
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [F] keys)
(Push [SET] key)

If the lens assembly cannot be focused, the Focus Encoder C.B.A. must be repositioned. Turn the focus ring clockwise.
* If the focus improves more, the Focus Encoder C.B.A. to the rear.
* If the focus deteriorates more, the Focus Encoder C.B.A. to the front.

Return to Step(6) to reposition the Focus Encoder C.B.A.

(Adjustment for Wide Side)
(15) Check the voltage at B303-(5).
(Example 3.662V)
(16) Subtract the voltage that was noted at Step(2) from the voltage at step(15).
(Example 3.662V-2.196V=1.466V)
(17) Set the voltage at B303-(18).
(Push [CMD], [0], [1] keys)
(Push [ADR], [2], [6] keys)
(Push [INC] or [DEC] key until the voltage at B303-(18) is (for Example) 1.466V.)
(18) Store the data into the EEPROM.
(Push [CMD], [0], [2] Keys)
(Push [ADR], [1], [0] keys)
(Push [SET] key)

[Note]
Take care not to Change the data while Storing it into the EEPROM.

(Confirmation of Back Focus)
(19) Turn the power SW OFF then ON.
(20) Check the back focus while Zooming.
(If back focus is not good refer to following table.)

1) Focus is not good at full wide side.

Adjust the data of ADR "26" at the full Wide Side keeping the voltage at B303-(18) within +-0.05V of the voltage in Step(17).

Check back focus While Zooming.
* If back focus is good, go to Step (18).
* If back focus is not good, stop the zoom at the position of bad focus. Turn the focus ring Clockwise and/or Counter-clockwise.

If focus improves when the focus ring is turned counter-clockwise reposition the Focus Encoder C.B.A. to the front.

If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.

Return to Step(6) to reposition the Focus Encoder C.B.A.

2) Focus is not good between TELE and WIDE.
Stop the zoom at the position of bad focus. Turn the focus ring Clockwise and/or Counter Clockwise
* If focus improves when the focus ring is turned counter-clockwise, reposition the Focus Encoder C.B.A. to the front.
* If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.
Return to Step(6) to reposition the Focus Encoder C.B.A.

Fig. C14

[6] VTR PEDESTAL (R-Y), (B-Y) ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	2C (R-Y) 2B (B-Y)			VECTOR SCOPE
02		0E (R-Y) 0D (B-Y)		
SPEC.			TP	
VECTOR COMES TO CENTRE.			VIDEO OUT	
CONDITION				
FADE: ON				

[Purpose]
Set black signal level for R-Y, B-Y.

[Symptom of Mis-adjustment]
Picture becomes bluish or reddish in low light.

(Initial Setting)
(1) Connect the vectorscope to VIDEO OUT.
(2) Set the unit to FADE ON mode.
(Push [SHIFT1] + [4] keys together)

(Adjustment for R-Y Pedestal)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [C] keys.
(5) Push [INC] or [DEC] key so that the vector moves to centre.

(Data writing for R-Y Pedestal)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [E] keys)
(Push [SET] key)

(Adjustment for B-Y Pedestal)
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [2], [B] keys.
(9) Push [INC] or [DEC] key so that the vector moves to centre.

(Data writing for B-Y Pedestal)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [D] keys)
(Push [SET] key)

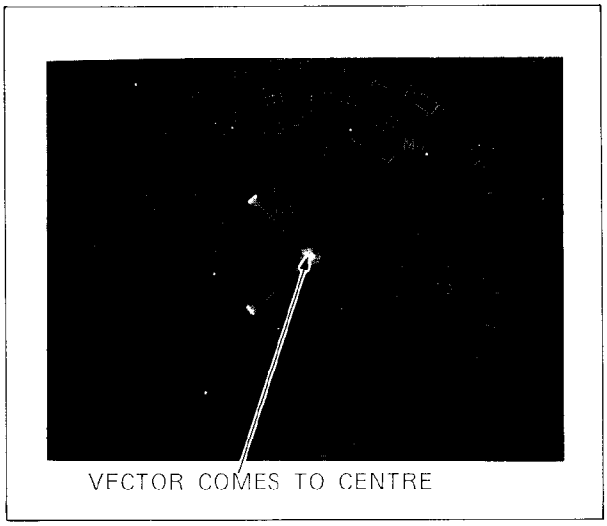


Fig. C15

(After adjustment)
(11) Set the unit to FADE OFF mode.
(Push [SHIFT1] + [5] keys together)

[7] COLOUR 90 degree, 270 degree AND BURST PHASE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	27 (PHASE) 28 (90 degree) 23 (270 degree)		COLOUR BAR	VECTOR SCOPE
02		17 (PHASE) 18 (90 degree) 15 (270 degree)		
SPEC.			TP	
Refer to Fig. C17, C18, C19			VIDEO OUT	

[Purpose]
Set each colour's reproduction.

[Symptom of Mis-adjustment]
Colour phase shift.

[Note]
After finishing the VTR PEDESTAL (R-Y), (B-Y) ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Connect the vectorscope to VIDEO OUT.
(2) Connect a capacitor (10V, 47uF) between B303-(6) and GND in order to eliminate the R-Y signal.
(3) Aim the unit at Colour Bar Chart.
(4) Adjust Burst Phase Adj. VR on vectorscope so that B-Y signal moves to B-Y axis as shown in Fig.C16.

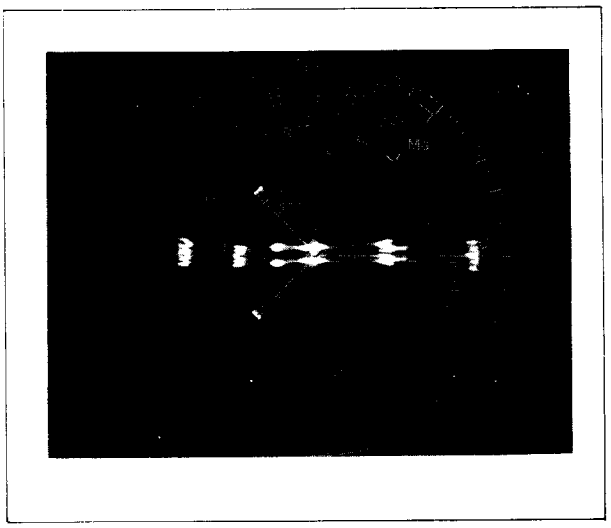


Fig. C16

(5) Disconnect the capacitor (10V, 47uF) between B303-(6) and GND.
(6) Connect the capacitor (10V, 47uF) between B303-(7) and GND in order to eliminate the B-Y signal.

(Adjustment for Colour 270 degree)
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [2], [3] keys.
(9) Push [INC] or [DEC] key so that the vector of signal moves to R-Y axis (270degree) as shown in Fig.C17.

(Data writing for colour 270 degree)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [5] keys)
(Push [SET] key)

Fig. C17

(Adjustment for colour 90 degree)
(11) Push [CMD], [0], [1] keys.
(12) Push [ADR], [2], [8] keys.
(13) Push [INC] or [DEC] key so that the vector of signal moves to R-Y axis (90degree) as shown in Fig.C18.

(Data writing for colour 90 degree)
(14) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [8] keys)
(Push [SET] key)

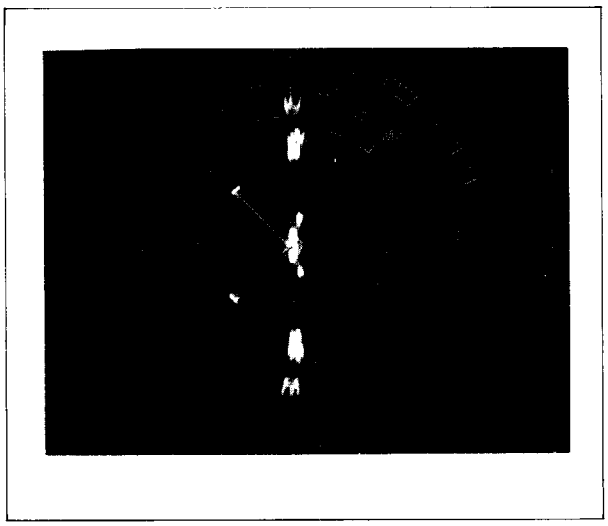


Fig. C18

(Adjustment for Burst phase adjustment)
(15) Disconnect the capacitor (10V, 47uF) between B303-(7) and GND.
(16) Connect the capacitor (10V, 47uF) between B303-(6) and GND in order to eliminate the R-Y signal.
(17) Push [CMD], [0], [1] keys.
(18) Push [ADR], [2], [7] keys.
(19) Push [INC] or [DEC] key so that the vector of Burst signal moves to burst phase in PAL as shown in Fig.C19.

(Data writing for Burst phase adjustment)
(20) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [7] keys)
(Push [SET] key)

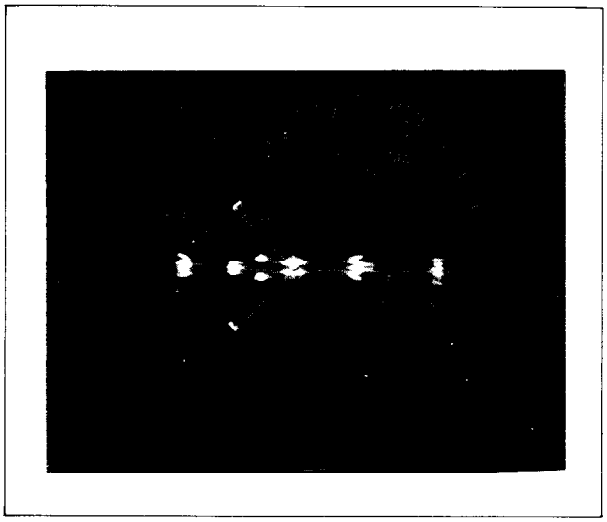


Fig. C19

[8] BURST LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	24		GRAY SCALE CHART	OSCILLO SCOPE
01		16		
SPEC.			TP	
300+−10mVp-p			VIDEO OUT (75 ohm Termination)	

[Purpose]
Set the optimum Burst level.

[Symptom of Mis-adjustment]
Chroma gain will be shifted.

(Initial Setting)
(1) Connect the oscilloscope to VIDEO OUT with 75ohm termination.
(2) Aim the unit at GRAY SCALE CHART.

(Adjustment)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [4] keys.
(5) Push [INC] or [DEC] key so that the burst level is 300+−10mVp-p as shown in Fig.C20.

(Data writing)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [6] keys)
(Push [SET] key)

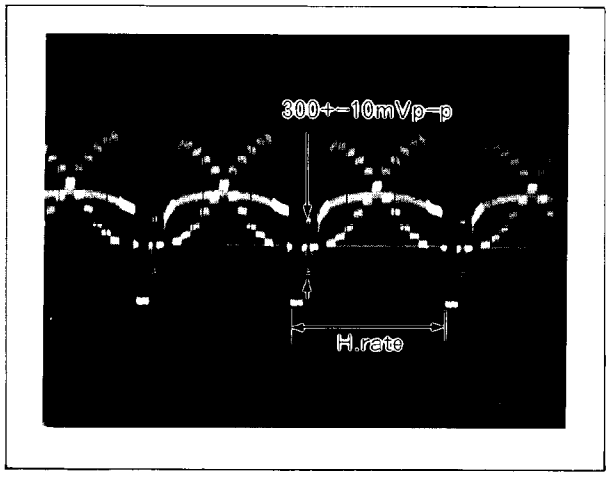


Fig. C20

[9] ALC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	21 (ROUGH) 22 (FINE)		GRAY SCALE CHART	OSCILLO-SCOPE
02		06 (ROUGH) 12 (FINE)		
SPEC.			TP	
300±50mVp-p (ROUGH) 300±10mVp-p (FINE)			B303−(14)	

[Purpose]
ALC level adjustment.

[Symptom of Mis-adjustment]
The picture is too bright or too dark.

(Initial Setting)
(1) Aim the unit at Gray Scale Chart.
(2) Connect the oscilloscope to B303-(14).
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [2] keys.
(5) Push [DATA], [8], [0] keys.
(6) Push [SET] key.
(7) After setting Item(3)~(6), perform next procedure.

(Adjustment for Rough)
(8) Push [CMD], [0], [1] keys.
(9) Push [ADR], [2], [1] keys.
(10) Push [INC] or [DEC] key so that the waveform is 300+−50mVp-p as shown in Fig.C21.

(Data writing for Rough)
(11) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [6] keys)
(Push [SET] key)

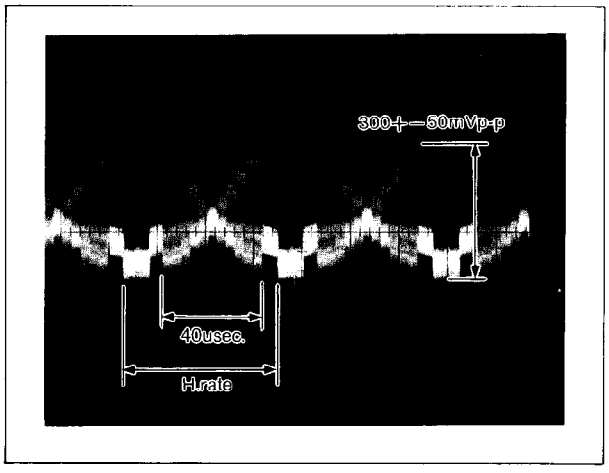


Fig. C21

(Adjustment for Fine)
(12) Push [CMD], [0], [1] keys.
(13) Push [ADR], [2], [2] keys.
(14) Push [INC] or [DEC] key so that the waveform is 300+-10mVp-p as shown in Fig.C22.

(Data writing for Fine)
(15) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [2] keys)
(Push [SET] key)

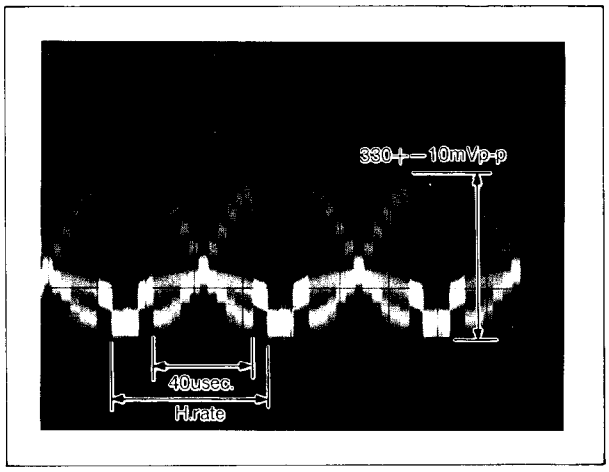


Fig. C22

[10] CDS GAIN ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	15		J CHART	OSCILLO SCOPE
02		08		
SPEC.			TP	
A=190+-10mVp-p			TP202	

[Purpose]
Standard element output set.

[Symptom of Mis-adjustment]
The picture is too dark or noisy.

[Note]
After finishing the ALC ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Aim the unit at J CHART.
(2) Connect the oscilloscope to TP202.

(Adjustment)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [1], [5] keys.
(5) Push [INC] or [DEC] key so that the waveform is 190+-10mVp-p as shown in Fig.C23.

(Data writing)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [8] keys)
(Push [SET] key)

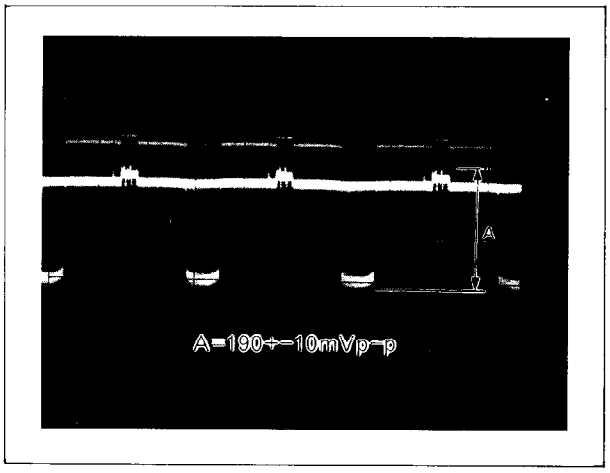


Fig. C23

[11] PEDESTAL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	17			OSCILLO-SCOPE
02		0A		
SPEC.			TP	
A=BLACK LEVEL+−5mV			B303−(9)	
CONDITION				
IRIS: CLOSE				

[Purpose]
Set black signal level.

[Symptom of Mis-adjustment]
The picture is too bright or too dark.

(Initial Setting)
(1) Connect the oscilloscope to B303-(9).
(2) Close the IRIS.
(Push [SHIFT1] + [1] keys together)

(Adjustment)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [1], [7] keys.
(5) Push [INC] or [DEC] key so that the waveform is black level +−5mV as shown in Fig.C24.

(Data writing)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [A] keys)
(Push [SET] key)

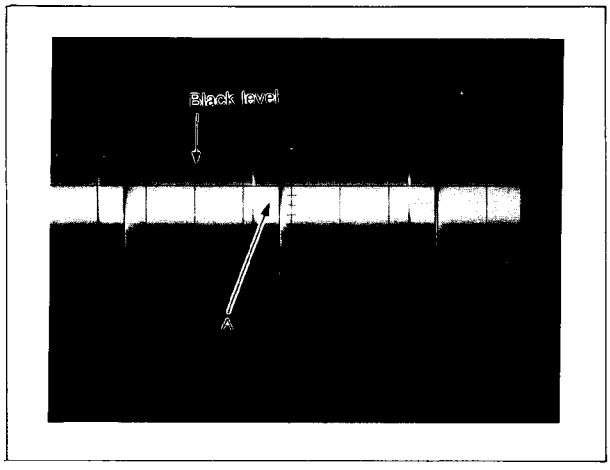


Fig. C24

(After adjustment)
(7) Set the IRIS to AUTO.
(Push [SHIFT1] + [D] keys together)

[12] AGC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	16		GRAY SCALE CHART	OSCILLO-SCOPE
02		09		
SPEC.			TP	
V/S=2.33+−0.15			B303−(16)	

[Purpose]
Set standard signal gain.

[Symptom of Mis-adjustment]
The picture is sometimes too dark or sometimes too bright.

(Initial Setting)
(1) Aim the unit at Gray Scale Chart.
(2) Connect the oscilloscope to B303 (16).

(Adjustment)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [1], [6] keys.
(5) Push [INC] or [DEC] key so that the ratio of V and S becomes 2.33+−0.15 as shown in Fig.C25.

(Data writing)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [9] keys)
(Push [SET] key)

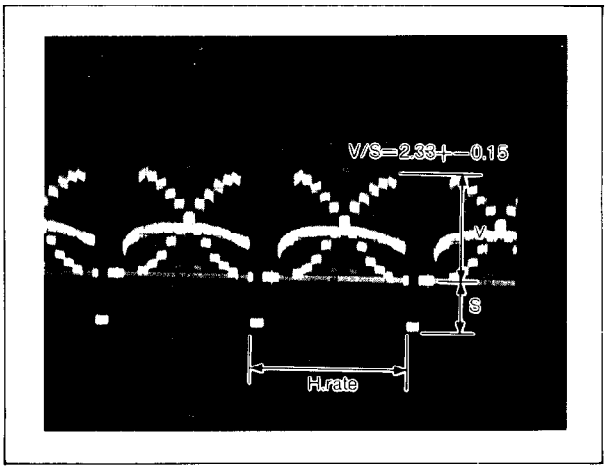


Fig. C25

[13] r LEAK ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	13		GRAY SCALE CHART	OSCILLO-SCOPE
02		11		
SPEC.			TP	
LESS THAN 30mVp-p			B303-(7), (8)	

(Initial Setting)
(1) Aim the unit at Gray Scale Chart.
(2) Connect the oscilloscope to B303-(14).
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [1] keys.
(5) Push [INC] or [DEC] key so that the waveform is 600+-5mVp-p as shown in Fig.C26.

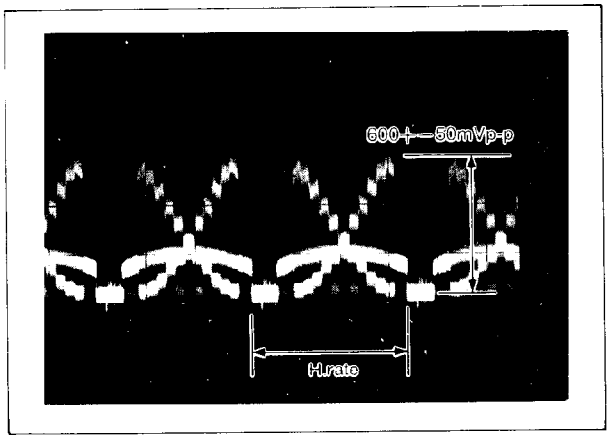


Fig. C26

(6) Connect the oscilloscope to B303-(8) through a resistor (10Kohm).
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [0], [B] keys.
(9) Push [INC] or [DEC] key so that the level of 2R-G is less than 10mVp-p as shown in Fig.C27.
(10) Push [CMD], [0], [1] keys.
(11) Push [ADR], [0], [C] keys.
(12) Push [INC] or [DEC] key so that the level of 2B-G is less than 10mVp-p as shown in Fig.C27.

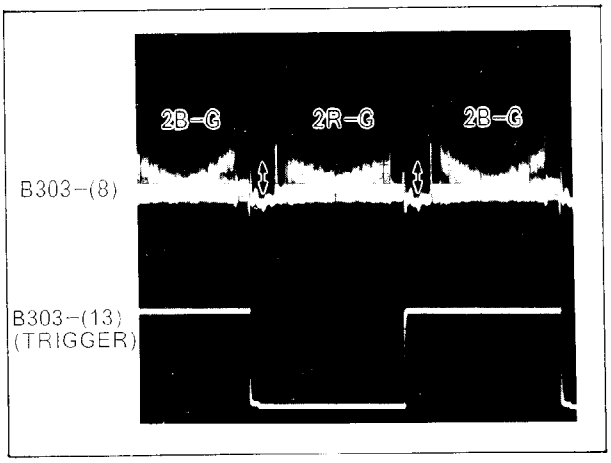


Fig. C27

(Adjustment)
(13) Connect the oscilloscope to B303-(7) through a resistor (10Kohm).
(14) Push [CMD], [0], [1] keys.
(15) Push [ADR], [1], [3] keys.
(16) Push [INC] or [DEC] key so that the waveform is less than 30mVp-p as shown in Fig.C28.

(Data writing)
(17) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [1], [1] keys)
(Push [SET] key)

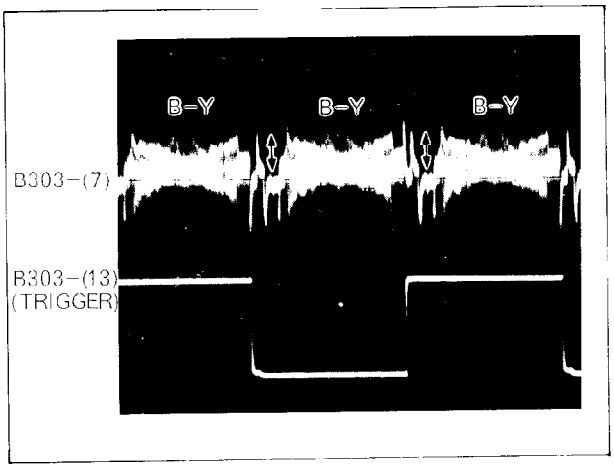


Fig. C28

[14] CHROMA PEDESTAL AND FH/2 LEVEL DIFFERENCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	06 (C-PEDE) 05 (FH/2 LEVEL)			VECTOR SCOPE
02		05 (C-PEDE) 04 (FH/2 LEVEL)		
SPEC.			TP	
VECTOR COMES TO CENTRE			VIDEO OUT	
CONDITION				
IRIS: CLOSE				

[Purpose]
Set chroma signal black and white level.

[Symptom of Mis-adjustment]
With a large shift, colour is added to black and white areas in the picture.

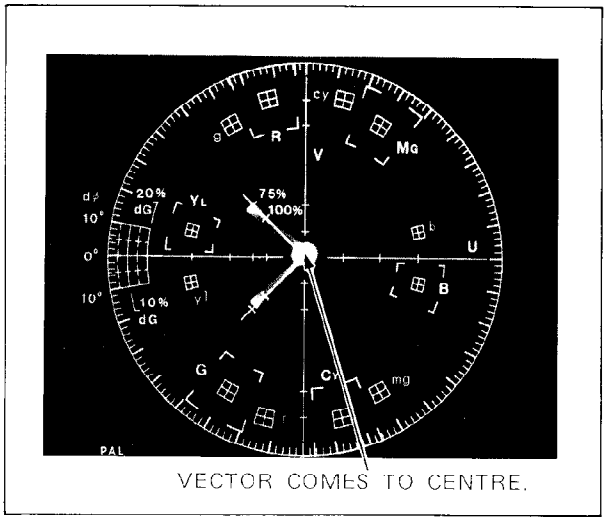
(Initial Setting)
(1) Close the IRIS.
(Push [SHIFT1] + [1] keys together)

(Adjustment for Chroma Pedestal)
(2) Push [CMD], [0], [1] keys.
(3) Push [ADR], [0], [6] keys.
(4) Push [INC] or [DEC] key so that the vector moves to centre as shown in Fig.C29.

(Data writing for Chroma Pedestal)
(5) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [5] keys)
(Push [SET] key)

(Adjustment for FH/2 level difference)
(6) Push [CMD], [0], [1] keys.
(7) Push [ADR], [0], [5] keys.
(8) Push [INC] or [DEC] key so that the vector moves to centre as shown in Fig.C29.

(Data writing for FH/2 level difference)
(9) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [4] keys)
(Push [SET] key)



VECTOR COMES TO CENTRE.

Fig. C29

(After adjustment)
(10) Set the IRIS to AUTO.
(Push [SHIFT1] + [D] keys together)

[15] R-Y, B-Y PEDESTAL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	03 (R-Y) 04 (B-Y)			OSCILLO SCOPE/ VECTOR SCOPE
02		02 (R-Y) 03 (B-Y)		
SPEC.			TP	
LEVEL DIFFERENCE IS MINIMIZED			B303-(6) (R-Y) B303-(7) (B-Y)	
CONDITION				
IRIS: CLOSE AGC: MINIMUM				

[Purpose]
Set chroma signal black and white level.

[Symptom of Mis-adjustment]
With a large shift, colour is added to black and white areas in the picture.

(Initial Setting)
(1) Close the IRIS.
(Push [SHIFT1] + [1] keys together)
(2) Set the AGC to MINIMUM.
(Push [SHIFT1] + [2] keys together)

(Adjustment for R-Y Pedestal)
(3) Connect the oscilloscope to B303-(6).
(4) Push [CMD], [0], [1] keys.
(5) Push [ADR], [0], [3] keys.
(6) Push [INC] or [DEC] key so that the level difference of black signal and blanking signal minimized as shown in Fig.C30.

(Data writing for R–Y Pedestal)
(7) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [2] keys)
(Push [SET] key)

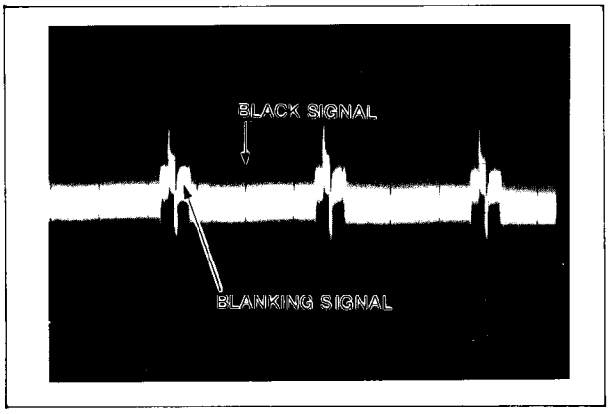


Fig. C30

(Adjustment for B–Y Pedestal)
(8) Connect the oscilloscope to B303–(7).
(9) Push [CMD], [0], [1] keys.
(10) Push [ADR], [0], [4] keys.
(11) Push [INC] or [DEC] key so that the level difference of black signal and blanking signal is minimized as shown in Fig.C31.

(Data writing for B–Y Pedestal)
(12) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [3] Keys)
(Push [SET] key)

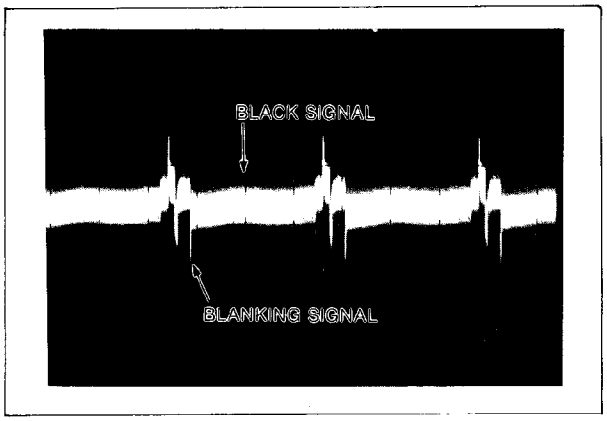


Fig. C31

(Confirmation)
(13) Return to AGC to NORMAL.
(Push [SHIFT1] + [D] keys together)
(14) Close the IRIS.
(Push [SHIFT] + [1] keys together)
(15) Connect the vectorscope to VIDEO OUT.
(16) Confirm that vector moves to centre as shown in Fig.C32.
(17) If vector does not move to centre, readjust the CHROMA PEDESTAL and FH/2 LEVEL DIFFERENCE ADJUSTMENT.

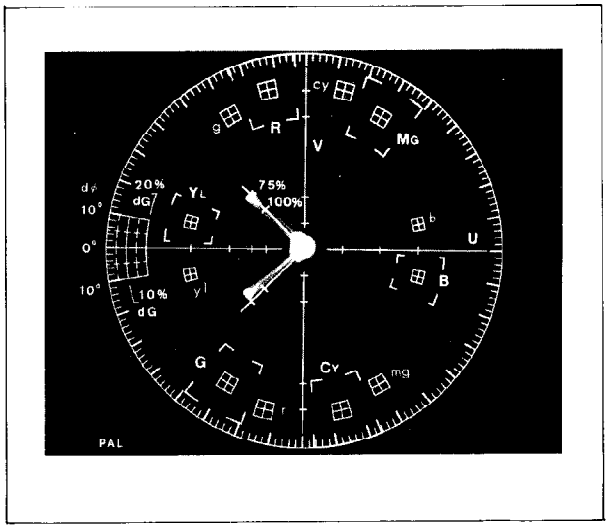


Fig. C32

(After adjustment)
(18) Set the IRIS to AUTO.
(Push [SHIFT1] + [D] keys together)

[16] A/D OFFSET ADJUSTMENT

[Note]
After finishing the R–Y, B–Y PEDESTAL ADJUSTMENT, perform this adjustment.

* AWB–Y (DARK) 1

(1) Close the IRIS.
(Push [SHIFT1] + [1] keys together)

(2) Push [CMD], [0], [1] keys.

(3) Push [ADR], [1], [A] keys.

(4) Enter a starting data level as follows and make a Note of the level set in this step for later adjustment.
Push [DATA], [X], [X] keys. (Any number, for example [1], [C])
Push [SET] key.

(5) Check the data in A/D address "05".
Push [CMD], [0], [5] keys.
Push [ADR], [0], [5] keys.
Push [SET] key.
The read out data should be between "08" ~ "40" and as low as possible.
If data is not between "08" ~ "40", repeat from step (2) changing the data level in step (4) as necessary. Continue to make Note of new data level entered.

(6) If data in A/D address "05" is within "08" ~ "40" and as small as possible, store the data level used in step (4) in the EEPROM address as follows:
Push [CMD], [0], [2] keys.

Push [ADR], [1], [3] keys.
Push [DATA], [X], [X] keys. (Data level from step (4))
Push [SET] key.
Store the final data (between "08" ~ "40") that was read from the A/D address "05" in step (5) to two EEPROM address "3F" and "7E", as follows:
Push [CMD], [0], [2] keys.
Push [ADR], [3], [F] keys.
Push [DATA], [X], [X] keys. (Final data from step (5) (between "08" ~ "20"))
Push [SET] key.
Push [CMD], [0], [2] keys.
Push [ADR], [7], [E] keys.
Push [DATA], [X], [X] Keys. (Final data from step (5) (between "08" ~ "20"))
Push [SET] key.

* S/H1 (DARK), S/H2 (DARK)

(1) Close the IRIS.
(Push [SHIFT1] + [3] keys together)

(2) Push [CMD], [0], [1] keys.

(3) Push [ADR], [1], [C] keys.

(4) Enter a starting data level as follows and make a Note of the level set in this step for later adjustment.
Push [DATA], [X], [X] keys. (Any number, for example [0], [E])
Push [SET] key.

(5) Check the data in A/D address both in the "06" (S/H1) and "16" (S/H2).
Push [CMD], [0], [5] keys.
Push [ADR], [0], [6] keys.
Push [SET] key. (Take note of readout data)
Push [CMD], [0], [5] keys.
Push [ADR], [1], [6] keys.
Push [SET] key. (Take a note of readout data)
The both read out data should be between "04" ~ "4A" and as low as possible.
If data is not between "04" ~ "4A", repeat from step (2) changing the data level in step (4) as necessary. Continue to make Note of the new data level entered.

(6) If data in A/D address "06" and "16" are within "04" ~ "4A" and as low as possible, store the data level used in step (4) into EEPROM address as follows:
Push [CMD], [0], [2] keys.
Push [ADR], [1], [4] keys. (Common address of S/H1, S/H2)
Push [DATA], [X], [X] keys. (Data level from step (4))
Push [SET] key.
Store the final data (S/H1) that was read from the A/D address "06" in step (5) to two EEPROM address "3C" and "2D" as follows: (Final data is between "04" ~ "4A")
Push [CMD], [0], [2] keys.
Push [ADR], [3], [C] keys. (S/H1)
Push [DATA], [X], [X] keys. (Final data from step (5) when A/D address is "06")
Push [SET] key.
Push [CMD], [0], [2] keys.
Push [ADR], [2], [D] keys. (S/H1)
Push [DATA], [X], [X] keys. (Final data from step (5) when A/D address is "06")
Push [SET] key.

Store the final data (S/H2) that was read from the A/D address "16" in step (5) to two EEPROM address "3D" and "2E" as follows: (Final data is between "04" ~ "4A")
Push [CMD], [0], [2] keys.
Push [ADR], [3], [D] keys. (S/H2)
Push [DATA], [X], [X] keys. (Final data from step (5) when A/D address is "16")
Push [SET] key.
Push [CMD], [0], [2] keys.
Push [ADR], [2], [E] keys. (S/H2)
Push [DATA], [X], [X] keys. (Final data from step (5) when A/D address is "16")
Push [SET] key.

[17] INDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	0B (R−Y) 0C (B−Y)		WHITE CHART	VECTOR SCOPE
02		60 (R−Y) 63 (B−Y)		
SPEC.			TP	
VECTOR COMES TO CENTRE			VIDEO OUT	

[Purpose]
Set standard white level for each colour temperature.

[Symptom of Mis-adjustment]
White becomes bluish or reddish.

(Initial Setting)
(1) Aim the unit at White Chart.
(2) Connect the vectorscope to VIDEO OUT.

(Adjustment for R−Y White Balance)
(3) Push [CMD], [0], [1] Keys.
(4) Push [ADR], [0], [B] keys.
(5) Push [INC] or [DEC] key so that the vector approaches to centre as much as possible as shown in Fig.C33.

(Data writing for R−Y White Balance)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [0] keys)
(Push [SET] key)

(Adjustment for B−Y White Balance)
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [0], [C] keys.
(9) Push [INC] or [DEC] key so that the vector approaches centre as much as possible as shown in Fig.C33.

(Data writing for B−Y White Balance)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [5] Keys)
(Push [SET] key)

(Adjustment)
(11) Repeat the Item(3) to Item(10) until vector moves to centre.

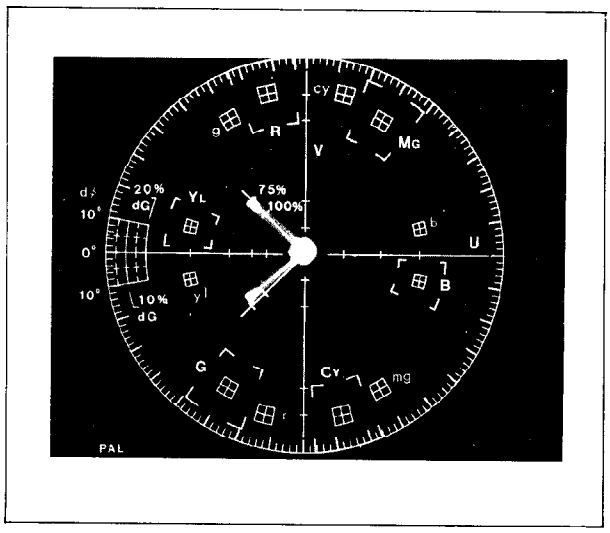


Fig. C33.

[18] R-Y, B-Y OFFSET ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
05	03 (R-Y) 04 (B-Y)		WHITE CHART	
02		3A (R-Y) 3B (B-Y)		
SPEC.			TP	

[Note]
After finishing the INDOOR WHITE BALANCE ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Aim the unit at White Chart.

(Data read out for R-Y Offset)
(2) Push [CMD], [0], [5] keys.
(3) Push [ADR], [0], [3] keys.
(4) Push [SET] key.

(Data writing for R-Y Offset)
(5) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [3], [A] keys)
(Push [SET] key)

(Data read out for B-Y Offset)
(6) Push [CMD], [0], [5] keys.
(7) Push [ADR], [0], [4] keys.
(8) Push [SET] key.

(Data writing for B-Y Offset)
(9) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [3], [B] keys)
(Push [SET] key)

[19] 3100 degree Kelvin
AWB DATA ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	05 (AWB-Y) 06 (S/H1) 16 (S/H2)		WHITE CHART	
02		53, 39 (AWB-Y) 54 (S/H1) 55 (S/H2)		
SPEC.			TP	

[Note]
After finishing the INDOOR WHITE BALANCE ADJUSTMENT, R-Y/B-Y OFFSET ADJUSTMEN perform this adjustment.

(Initial Setting)
(1) Aim the unit at White Chart.

* AWB-Y

(Data read out)
(2) Push [CMD], [0], [5] keys.
(3) Push [ADR], [0], [5] keys.
(4) Push [SET] key.

(Data writing)
(5) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [3] keys)
(Push [SET] key)
(Push [CMD], [0], [2] keys)
(Push [ADR], [3], [9] keys)
(Push [SET] key)

* S/H 1

(Data read out)
(6) Push [CMD], [0], [5] keys.
(7) Push [ADR], [0], [6] keys.
(8) Push [SET] key.

(Data writing)
(9) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [4] keys)
(Push [SET] key)

* S/H 2

(Data read out)
(11) Push [CMD], [0], [5] keys.
(12) Push [ADR], [1], [6] keys.
(13) Push [SET] key.

(Data writing)
(14) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [5] keys)
(Push [SET] key)

[20] INDOOR COLOUR PHASE AND GAIN ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	09(R-Y PHASE) 07(B-Y PHASE) 0A(R-Y GAIN) 08(B-Y GAIN)		COLOUR BAR CHART	VECTOR SCOPE
02		62(R-Y PHASE) 65(B-Y PHASE) 61(R-Y GAIN) 64(B-Y GAIN)		
SPEC.			TP	
RED : 106+-3 degree (PHASE) 203+-5% (GAIN) YELLOW: 165+-3 degree (PHASE) 68+-5% (GAIN)			VIDEO OUT	

[Note]
After finishing the INDOOR WHITE BALANCE ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Aim the unit at Colour Bar Chart.

(Adjustment for R-Y Phase)
(2) Push [CMD], [0], [1] keys.
(3) Push [ADR], [0], [9] keys.(R-Y PHASE)
(4) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches the Spec. as shown in Fig.C34.

(Data writing for R-Y Phase)
(5) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [2] keys)
(Push [SET] key)

(Adjustment for B-Y Phase)
(6) Push [CMD], [0], [1] keys.
(7) Push [ADR], [0], [7] keys.(B-Y PHASE)
(8) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches the Spec. as shown in Fig.C34.

(Data writing for B-Y Phase)
(9) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [5] keys)
(Push [SET] key)

(Adjustment for R-Y Gain)
(10) Push [CMD], [0], [1] keys.
(11) Push [ADR], [0], [A] keys.(R-Y GAIN)
(12) Push [INC] or [DEC] key so that the gain of Red and Yellow vector approaches the Spec. as shown in Fig.C34.

(Data writing for R-Y Gain)
(13) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [1] keys)
(Push [SET] key)

(Adjustment for B-Y Gain)
(14) Push [CMD], [0], [1] keys.
(15) Push [ADR], [0], [8] keys.
(16) Push [INC] or [DEC] key so that the gain of Red and Yellow vector approaches the Spec. as shown in Fig.C34.

(Data writing for B-Y Gain)
(17) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [4] keys)
(Push [SET] key)

(Adjustment)
(18) Repeat the Item(2) to Item(17) until vectors become within spec. as shown in Fig.C34.

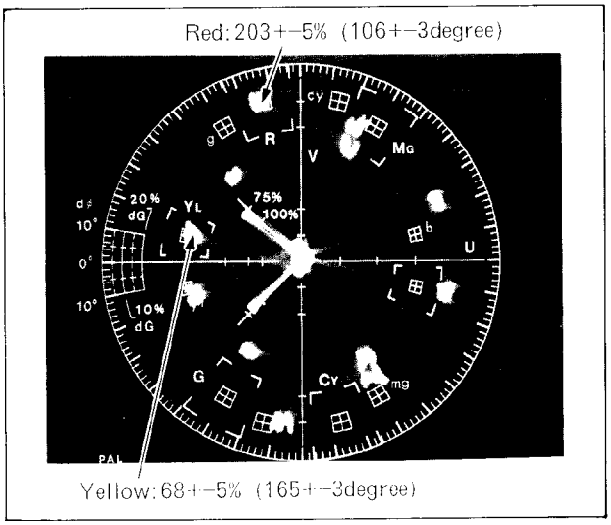


Fig. C34

[21] OUTDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	0B(R-Y) 0C(B-Y)		WHITE CHART	VECTOR SCOPE
02		6C(R-Y) 6F(B-Y)		
SPEC.			TP	
VECTOR COMES TO CENTRE			VIDEO OUT	
CONDITION				
COLOUR TEMPERATURE CONVERSION FILTER VHK0713 (C12) VHK0716 (C2)				

[Purpose]
Set standard white level for each colour temperature.

[Symptom of Mis-adjustment]
White becomes bluish or reddish.

(Initial Setting)
(1) Aim the unit at White Chart.
(2) Cover the lens with colour temperature conversion filter VFK0713(C12) + VFK0716(C2) to imitate the outdoor lighting.

(Adjustment for R–Y White Balance)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [0], [B] keys.
(5) Push [INC] or [DEC] key so that the vector approaches centre as much as possible as shown in Fig.C35.

(Data writing for R–Y White Balance)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [C] keys)
(Push [SET] key)

(Adjustment for B–Y White Balance)
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [0], [C] keys.
(9) Push [INC] or [DEC] key so that the vector approaches to centre as much as possible as shown in Fig.C35.

(Data writing for B–Y White Balance)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [F] keys)
(Push [SET] key)

(Adjustment)
(11) Repeat the Item(3) to Item(10) until the vector is centre as shown in Fig.C35.

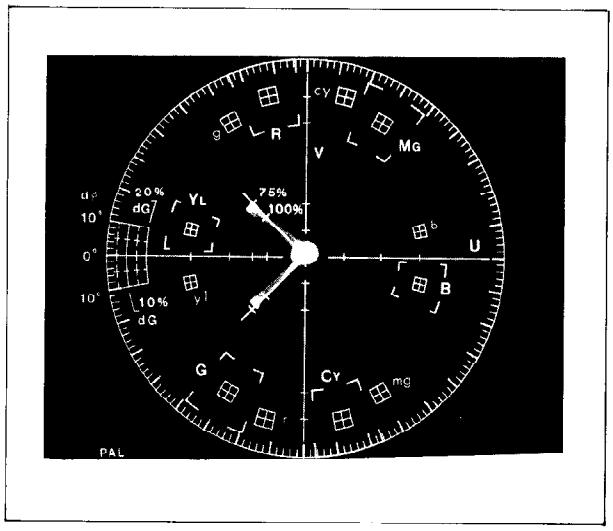


Fig. C35

[22] 5100 degree Kelvin
AWB DATA ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	05 (AWB – Y) 06 (S/H1) 16 (S/H2)		WHITE CHART	
02		56 (AWB – Y) 57 (S/H1) 58 (S/H2)		
SPEC.			TP	
CONDITION				
COLOUR TEMPERATURE CONVERSION FILTER VFK0713 (C12) VFK0716 (C2)				

[Note]
After finishing the OUTDOOR WHITE BALANCE ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Aim the unit at White Chart.
(2) Cover the lens with colour temperature conversion filter VFK0713(C12) + VFK0716 (C2) to imitate the outdoor lighting.

* AWB–Y

(Data read out)
(3) Push [CMD], [0], [5] keys.
(4) Push [ADR], [0], [5] keys.
(5) Push [SET] key.

(Data writing)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [6] keys)
(Push [SET] key)

* S/H 1

(Data read out)
(7) Push [CMD], [0], [5] keys.
(8) Push [ADR], [0], [6] keys.
(9) Push [SET] key.

(Data writing)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [7] keys)
(Push [SET] key)

* S/H 2

(Data read out)
(11) Push [CMD], [0], [5] keys.
(12) Push [ADR], [1], [6] keys.
(13) Push [SET] key.

(Data writing)
(14) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [5], [8] keys)
(Push [SET] key)

[23] OUTDOOR COLOUR PHASE AND GAIN ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	09(R-Y PHASE) 0F(B-Y PHASE) 0A(B-Y GAIN) 0B(B-Y GAIN)		COLOUR BAR CHART	VECTOR SCOPE
02		6E(R-Y PHASE) 71(B-Y PHASE) 6D(R-Y GAIN) 70(B-Y GAIN)		
SPEC.			TP	
RED : 106+-3 degree (PHASE) 250+-5% (GAIN) YELLOW: 165+-5 degree (PHASE) 69+-5% (GAIN)			VIDEO OUT	
CONDITION				
COLOUR TEMPERATURE CONVERSION FILTER VFK0713(C12) VFK0716(C2)				

[Note]
After finishing the OUTDOOR WHITE BALANCE ADJUSTMENT, perform this adjustment.

(Initial Setting)
(1) Aim the unit at White Chart.
(2) Cover the lens with colour temperature conversion filter VFK0713(C12) + VFK0716 (C2) to imitate the outdoor lighting.

(Adjustment for R-Y Phase)
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [0], [9] keys.(R-Y PHASE)
(5) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches the Spec. as shown in Fig.C36.

(Data writing for R-Y Phase)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [E] keys)
(Push [SET] key)

(Adjustment for B-Y Phase)
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [0], [7] keys.(B-Y PHASE)
(9) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches to the Spec. as shown in Fig.C36.

(Data writing for B-Y Phase)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [7], [1] keys)
(Push [SET] key)

(Adjustment for R-Y Gain)
(11) Push [CMD], [0], [1] keys.
(12) Push [ADR], [0], [A] keys.(R-Y GAIN)
(13) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches to the Spec. as shown in Fig.C36.

(Data writing for R-Y Gain)
(14) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [D] keys)
(Push [SET] key)

(Adjustment for R-Y Gain)
(15) Push [CMD], [0], [1] keys.
(16) Push [ADR], [0], [8] keys.
(17) Push [INC] or [DEC] key so that the phase of Red and Yellow vector approaches to the Spec. as shown in Fig.C36.

(Data writing for R-Y Gain)
(18) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [7], [0] keys)
(Push [SET] key)

(Adjustment)
(19) Repeat the Item(3) to Item(18) until vectors are within Spec. as shown in Fig.C36.

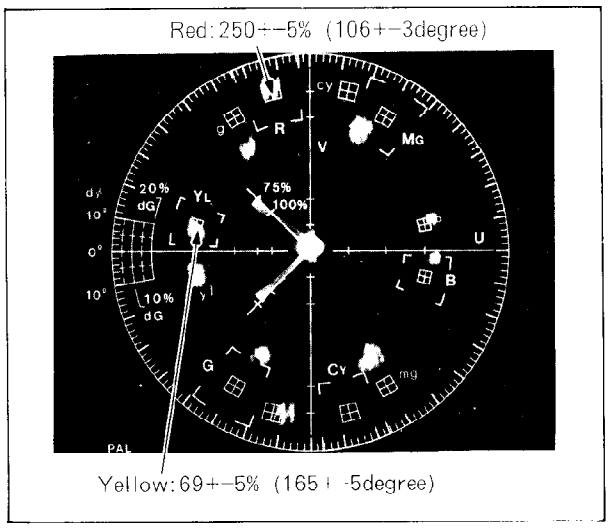


Fig. C36

[24] EDGE CORRECTION ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	18		BLACK AND WHITE CHART	OSCILLO SCOPE
02		0B		
SPEC.			TP	
EDGE COMPONENT IS MINIMIZED			B303-(6)	
CONDITION				
ALC: 800mV				

[Purpose]
Cut the high luminance colour area.

[Symptom of Mis-adjustment]
Colour is generated in high luminance

(Initial Setting)
(1) Aim the unit at Black and White Chart.
(2) Connect the oscilloscope to B303-(14).
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [1] keys.
(5) Push [INC] or [DEC] key so that the waveform is 800mVp-p as shown in Fig.C37.

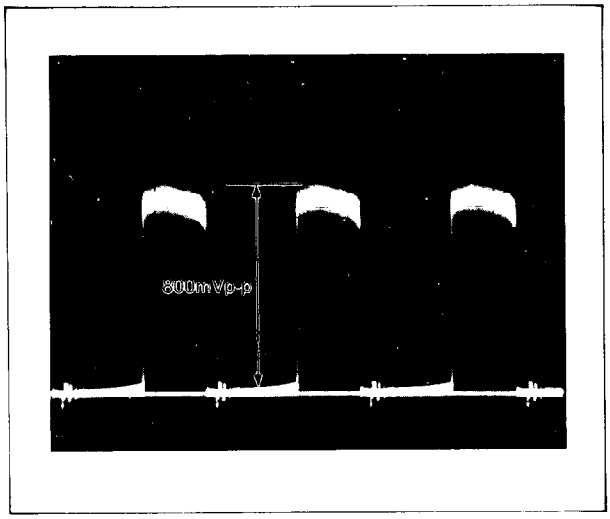


Fig. C37

(Adjustment)
(6) Connect the oscilloscope to B303-(8).
(7) Push [CMD], [0], [1] keys.
(8) Push [ADR], [1], [8] keys.
(9) Push [INC] or [DEC] key so that the edge signal is minimized as shown in Fig.C38.

(Data writing)
(10) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [B] keys)
(Push [SET] key)

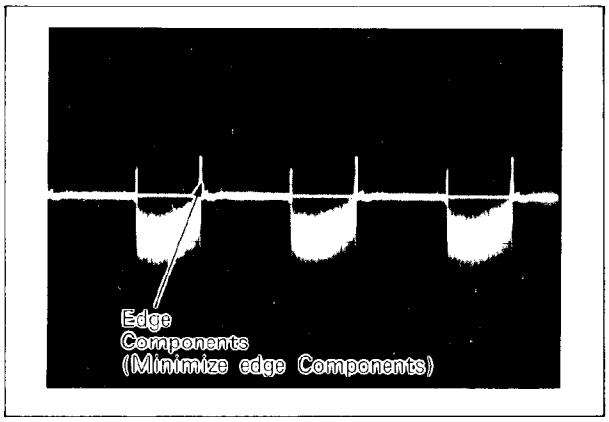


Fig. C38

(After adjustment)
(11) Return the IRIS to NORMAL.
(Push [SHIFT1] + [D] keys together)

[25] HC(High Cut) ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	19		GRAY SCALE	SOCILLO SCOPE
02		0C		
SPEC.			TP	
Refer to Fig. C40			VIDEO OUT	
CONDITION ALC: 700mV Colour Temperature Conversion filter: VFK0714 (C8)				

(Initial Setting)
(1) Aim the unit at Gray Scale Chart.
(2) Connect the oscilloscope to B303-(14).
(3) Push [CMD], [0], [1] keys.
(4) Push [ADR], [2], [1] keys.
(5) Push [INC] or [DEC] key so that the waveform is 700mVp-p as shown in Fig.C39.

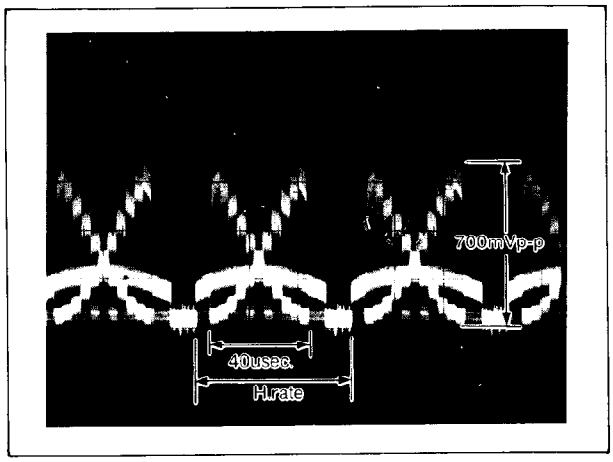


Fig. C39

(6) Cover the lens with colour temperature conversion filter VFK0714(C8).
(7) Connect the oscilloscope to VIDEO OUT.

(Adjustment)
(8) Push [CMD], [0], [1] keys.
(9) Push [ADR], [1], [9] keys.
(10) Push [INC] or [DEC] key so that the first step of gray scale chart is less than 20mVp−p and third step in more than 40mVp−p as shown in Fig. C40.

(Data writing)
(11) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [C] keys)
(Push [SET] key)

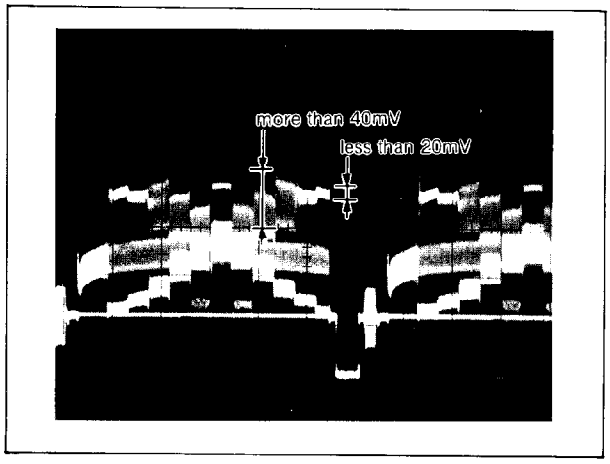


Fig. C40

(After adjustment)
(12) Return the IRIS to NORMAL.
(Push [SHIFT1] + [D] keys together)

[26] DATA WRITING FOR COLOUR REPRODUCTION AND COLOUR DETECTION

[Purpose]
Each adjustment voltage is recorded in EEPROM as digital data.
Regarding colour reproduction adjustments such as white balance, phase and gain adjustments, only adjustments have been performed at indoor lighting condition (3200degree kelvin) and outdoor lighting condition (5600degree kelvin).
EEPROM needs the data for other condition, such as 3600 degree-kelvin, 4500 degree kelvin and 6000 degree kelvin.
To provide this data, the following calculation has to be done and result entered into the proper address of EEPROM.

[Mis-entering]
White balance and colour reproduction in each light between indoor and outdoor are poor.

[Note]
* Before data writing, perform the adjustments of Item[17] to Item[24].
* VFK0701ROMb (New ROM) for E.V.R must be installed in E.V.R Fixture. Mode selector should be set to "B" side.

(1) DATA WRITING FOR COLOUR REPRODUCTION.
* Push [SHIFT2] + [3] keys together.
(All formulas in Fig.C41 are performed and results are stored in EEPROM automatically.)

NO.	ITEM	EEPROM ADDRESS	FORMULA
1	R-Y WB 28	5A	ADR 60
2	R-Y WB 36	66	ADR 60 + 0.62 × (ADR 6C − ADR 60)
3	R-Y WB 60	72	ADR 60 + 1.17 × (ADR 6C − ADR 60)
4	R-Y WB MIX	78	ADR 6C
5	R-Y WB HE	40	ADR 6C
6	R-Y GC 28	5B	ADR 61 − 0.43 × (ADR 6D − ADR 61)
7	R-Y GC 36	67	ADR 61 + 0.50 × (ADR 6D − ADR 61)
8	R-Y GC 60	73	ADR 6D
9	R-Y GC MIX	79	ADR 6D
10	R-Y GC HE	41	ADR 6D
11	R-Y MAT 28	5C	ADR 62
12	R-Y MAT 36	68	ADR 6E
13	R-Y MAT 60	74	ADR 6E
14	R-Y MAT MIX	7A	ADR 6E
15	R-Y MAT HF	42	ADR 6E
16	B-Y WB 28	5D	ADR 63
17	B-Y WB 36	69	ADR 63 + 0.06 × (ADR 6F − ADR 63)
18	B-Y WB 60	75	ADR 63 + 1.24 × (ADR 6F − ADR 63)
19	B-Y WB MIX	7B	ADR 63 + 0.53 × (ADR 6F − ADR 63)
20	B-Y WB HE	43	ADR 6F
21	B-Y GC 28	5E	ADR 64 − 0.29 × (ADR 64 − ADR 70)
22	B-Y GC 36	6A	ADR 64 − 0.73 × (ADR 64 − ADR 70)
23	B-Y GC 60	76	ADR 70
24	B-Y GC MIX	7C	ADR 70
25	B-Y GC HE	44	ADR 70
26	B-Y MAT 28	5F	ADR 65
27	B-Y MAT 36	6B	ADR 65 − 5
28	B-Y MAT 60	77	ADR 71
29	B-Y MAT MIX	7D	ADR 71
30	B-Y MAT HE	45	ADR 71

(2) DATA WRITING FOR COLOUR DETECTION
* Push [SHIFT2] + [4] keys together.
(All formulas in Fig.C42 are performed and results are stored in EEPROM automatically.)

NO.	ITEM	EEPROM ADDRESS	FORMULA
1	S/H 1 G 28	20	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 39$
2	S/H 1 G 31	21	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 39$
3	S/H 1 G 36	22	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 33$
4	S/H 1 G 51	23	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 45$
5	S/H 1 G 60	24	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 16$
6	S/H 1 G MIX	25	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 35$
7	S/H 1 Mg 28	27	255
8	S/H 1 Mg 31	28	255
9	S/H 1 Mg 36	29	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 3$
10	S/H 1 Mg 51	2A	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 48$
11	S/H 1 Mg 60	2B	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 63$
12	S/H 1 Mg MIX	2C	$\left[\frac{(ADR\,54 - ADR\,2D)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 5$
13	S/H 2 31 → 28	46	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 0.14 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right]$
14	S/H 2 28 → 31	47	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 - 0.14 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right] + 4$
15	S/H 2 36 → 31	48	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 0.20 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right]$
16	S/H 2 31 → 36	49	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 0.20 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right] + 2$
17	S/H 2 51 → 36	4A	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 0.49 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right]$
18	S/H 2 36 → 51	4B	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 0.49 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right] + 4$
19	S/H 2 60 → 51	4C	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 1.23 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right]$
20	S/H 2 51 → 60	4D	$\left[\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right] \times 128 + 1.23 \times \left[\left\{\frac{(ADR\,58 - ADR\,2E)}{(ADR\,56 - ADR\,7E)}\right\} \times 128 - \left\{\frac{(ADR\,55 - ADR\,2E)}{(ADR\,53 - ADR\,7E)}\right\} \times 128\right] + 10$

Fig. C42

(3) HOW TO CALCULATE AND ENTER THE DATA MANUALLY.

You can do the calculations and entering the data to EEPROM manually as follows.

(For example)
Item : R-Y WB 36

Formula : ADR60+0.62x(ADR6C-ADR60)
EEPROM Address : 66

(1) Read out the data from address "60".
(Push [CMD], [0], [4] keys)
(Push [ADR], [6], [0] keys)
(Push [SET] key)
Number which is indicated in DATA LED is a data of ADR60.
For example, indicated data is "42".
(2) Read out the data from address "6C".
(Push [CMD], [0], [4] keys)
(Push [ADR], [6], [C] keys)
(Push [SET] key)
Number which is indicated in DATA LED is a data of ADR6C.
For example, indicated data is "5F".
(3) For example, if data which are read out form ADR60=42, ADR6C=5F, above formula becomes;
R-Y WB 36 = 42+0.62x(5F-42)
(4) Convert the hexadecimal data into decimal number using conversion table. (Refer to Fig. C43).
R-Y WB 36 = 42+0.62x(5F-42)
(Hexadecimal)
= 66+0.62x(95-66)(Decimal)
= 83.98
= 84(Decimal)
(5) Convert the result "84" into hexadecimal number using conversion table.
84(Decimal)= 54(Hexadecimal)
(6) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [6], [6] keys)
(Push [DATA], [5], [4] keys)
(Push [SET] key)

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A ← ①	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
b	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
d	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

(② ↑ 8)

For example: If indication of EVR is "A8" (as upper digit is "A" and lower digit is "8"), a decimal value of "168" is obtained from the intersection of ① and ② in the above table.

Fig. C43 Hexadecimal-Decimal Conversion Table

[27] VITC SIGNAL LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	D/A	EEPROM		
01	01			OSCILLO-SCOPE
02		00		
SPEC.			TP	
580+−20mV			VIDEO OUT	
CONDITION				
FADE: ON				

(Initial Setting)
(1) Connect the oscilloscope to VIDEO OUT.
(2) Set the unit to FADE ON mode.
(Push [SHIFT1] + [4] keys together)
(3) Connect the VITC Generator to the Character Generator terminal.

(Adjustment)
(4) Push [CMD], [0], [1] keys.
(5) Push [ADR], [0], [1] keys.
(6) Push [INC] or [DEC] key so that the VITC signal level becomes 580+−20mVp−p as shown in Fig.C44.

(Data writing)
(7) Store the data into EEPROM.
(Push [CMD], [0], [2] keys)
(Push [ADR], [0], [0] keys)
(Push [SET] key)

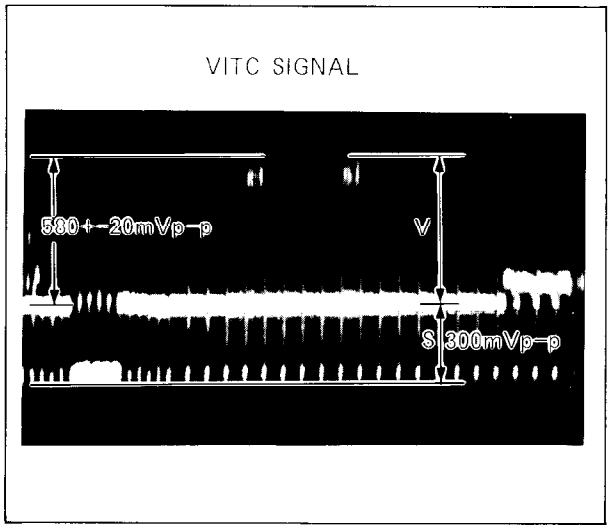


Fig. C44

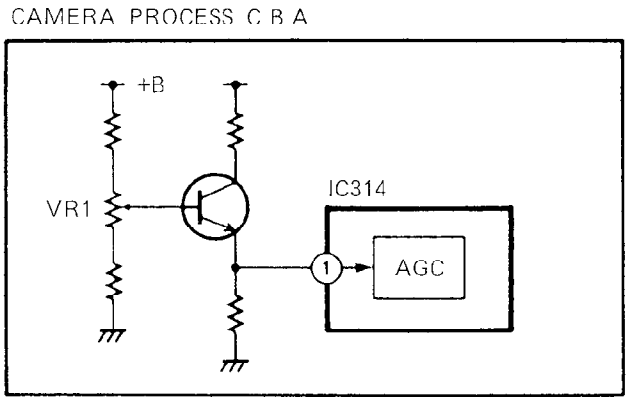
(After adjustment)
(8) Set the unit to FADE OFF mode.
(Push [SHIFT1] + [5] keys together)

2-6-2. HOW TO OPERATE E.V.R FIXTURE

E.V.R. FIXTURE

Camera Process section employs the remarkable memory IC so called E.E.P.R.O.M. (Electric Erasable Programmable Read Only Memory) that fulfills the role of variable resistor in conventional camera process.
In the conventional camera process, each adjustment points were used to be adjusted by turning variable resistors as shown in Fig.C45.
In case of NV-G202,NV-G220, adjustment voltage is memorized in EEPROM as 8 bit digital data.
EEPROM supplies the memorized adjustment voltage to the adjustment point through D/A converter as shown in Fig.C46.
The data in EEPROM can be electrically exchanged freely. E.V.R.(Electric Variable Resistor) has been developed to exchange the 8 bit data of EEPROM in process circuit.
E.V.R. can also communicate with D/A converter directly to change the each control voltage.
Normally EEPROM is having voltage data and is sent to D/A converter where digital data is changed into DC voltage(control voltage).
Using E.V.R. you can change the data stored in EEPROM easily, in other words, you can adjust the camera process section. And E.V.R. can also send the data to D/A converter directly for confirming the adjustment.

[CONVENTIONAL ADJUSTMENT]



Control voltage is decided by variable resistor.

Fig. C45

[NEW ADJUSTMENT BY E.V.R.)

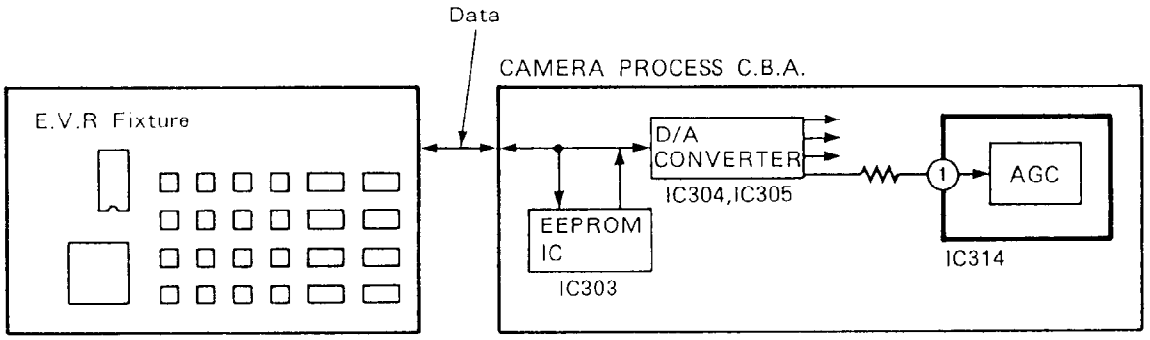
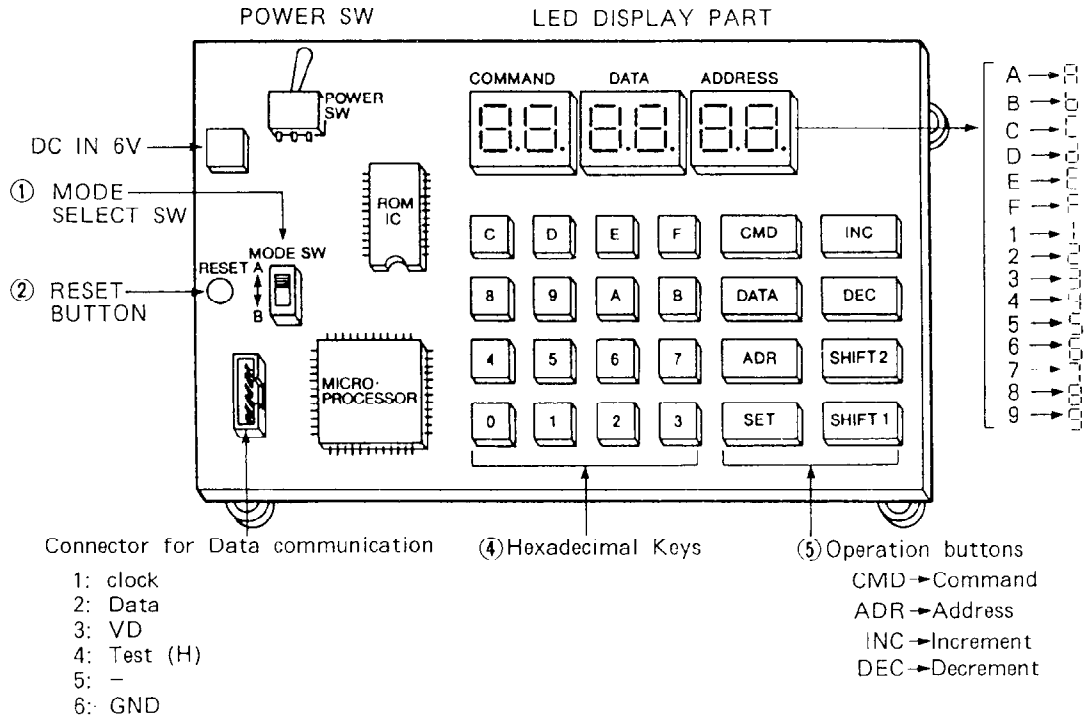


Fig. C46

Name of Key



NO.	NAME	DESCRIPTION
①	MODE SW	MODEL selection switch. In case of this model, turn it to "**B**" side.
②	RESET BUTTON	After Power is on, if operation is not stable, push this SW.
③	ROM IC	ROM IC of which Programing (to operate E.V.R) is memorized in. In the future, to cope with new camcorder servicing, this ROM IC could be replaced to new version.
④	HEXADECIMAL KEYS	Key buttons of 16 pieces (from "O" to "F"). These are used when "COMMAND", "DATA" or "ADDRESS" is set.
⑤	OPERATION BUTTONS	The buttons to operate writing, reading or setting the data.
	CMD: Command button	This is used to decide the which communication between E.V.R and camcorder (for example, data writing or reading) to perform.
	DATA: Data button	To be used for displaying the data.
	ADR: Address button	To appont the EEPROM address or D/A converter address.
	SET: Set button	To communicate the data which is displaying with camcorder.
	INC: Incliment DEC: Decliment	Increase or decrease the data one by one (+1, −1)
	SHIFT 1 button	To carry out macro operation (while pusing with hexadecimal keys) SHIFT 1 button is used.
	SHIFT 2 button	To write average data and fixed data automatically, To calculate colour reproduction and colour detection automatically (while pushing with hexadecimal keys) SHIFT 2 button is used.

Fig. C47

(Before Adjusting, How to use the E.V.R. Fixture)

1) How to Read out the Data which is being stored in EEPROM.
Connect the E.V.R. Fixture as shown in Fig.C3

Result:
Adjustment value of ALC has been set for "4D". It is convenient to read out the data like this (and take memo) before writing the new data next time.
Even if something mistake is happened when writing the new data, you can rewrite original data.

Item		Proceduring Order	Buttons to be Pushed	LED Indication
	1	Turn the power SW to ON.		0 1 80 00
For Example, Recording out the data of ALC Adjustment comunication from camcorder to E.V.R Fixture Camera → E.V.R	2	Set the Command mode to "04" "04" is read out command. (Refer to command description)	CMD 0 4	LED lights up 04 80 00 Command setting
	3	Set the Address of EEPROM	ADR 0 6	04 80 06 Address setting of EEPROM LED lights up
	4	Read out the data	SET Push this for 2 seconds	04 4d 06 data for ALC for example

Fig. C48

2) Writing the New Data.

Note 1:
In order to avoid the mis-writing protection data is stored in Address "34" of EEPROM. This must be released before writing. Releasing the write protection, Push [SHIFT1] key and [C] key together.
* There is 2 procedures to write the new data.
  1) Write the data after finding the best point (Search and writing procedure)
  2) Write the data directly (Direct writing Procedure)

(1) Search and write Procedure. (For example: ALC Adjustment)

Item		Proceduring Order	Buttons to be Pushed	LED Indication
	1	Turn the power SW to ON.		0 180 00
For Example, writing the ALC adjustment data. E.V.R → Camera	2	Set the command to "01".	CMD 0 1 Command for search mode	LED lights up 0 1/80 00
	3	Set the Address of D/A converter for "21" E.V.R → D/A (communication from E.V.R to D/A converter)	ADR 2 1	0 180 2 1 LED lights up
	4	Adjustment Push "DEC" or "INC" button so that Peak to Peak of waveform at TP307 become 300mV±20mV. (use oscilloscope)	Search with INC or DEC	LED will disappear 0 14d/2 1
	5	Write in the data after finding the best front. • Set the command to "02".	CMD 0 2	LED lights up 02/4d 2 1
		• Set the Address of EEPROM for "06".	ADR 0 6	02 4d 06 LED lights up
		• Push the "SET" button.	SET	02 4d 06 Data "4D" has been stored into EEPROM.

Fig. C49

Note 2:
In this procedure, E.V.R. controls the D/A converter directly (Because data of D/A converter is changed, adjustment voltage is changed) and after finding the best point E.V.R. markes D/A converter transfer the data to EEPROM. (Refer to construction system in Fig.C46) Then, Data is written in EEPROM, Therefor, Address of D/A converter is different from address of EEPROM.
For example, in case of ALC adjustment, address of D/A converter is "21" but address of EEPROM is "06".

Note 3:
If LED display "Err" that means Error, check the write protection (refer to Note 1).

Confirmation:
Confirmation whether data is written correctly or not.
Procedure –
1. Set the command to "04".
   (Push [CMD], [0], [4] keys)
2. Set the address to "06".
   (Push [ADR], [0], [6] keys)
3. Push [SET] key.
4. The number which is indicated on DATA LED is a data which has been written.

(2) Direct Writing Procedure

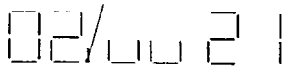
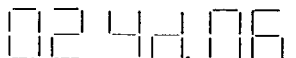
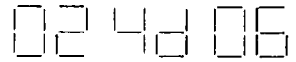
Item	Proceduring Order		Buttons to be Pushed	LED Indication
	1	Turn the power SW to ON.		same as (1)
For Example, writing the ALC Adjustment data	2 3 4	Searching the best Point. same as (1)	same as (1)	same as (1)
	5	Change the command to "02"	[CMD] [0] [2]	LED lights up  Command for Direct writing
	6	Set the address of EEPROM to "06"	[ADR] [0] [6]	address of EEPROM LED lights up
	7	Set the data best point "4D"	[DATA] [4] [D]	 LED lights up
	8	Write the data	[SET] Push this for 2 sec.	LED disappear 

Fig. C50

Confirmation:

Confirm whether data is written correctly or not.

Procedure –

1. Set the Command to "04". (Push [CMD], [0], [4] keys)
2. Set the Address to "06". (Push [ADR], [0], [6] keys)
3. Push [SET] key.
4. The number which is indicated on DATA LED is a data which has been written.

Write the data "00" to address "34" of EEPROM so that wrong data is written in by mistake. This procedure is automatically done it [SHIFT1] and [B] are pushed together.

(Adjustment Items required after replacing the individual components)

When following parts are replaced, check the following adjustment items and adjust following items if necessary.

NO.	Replaced Parts	Adjustment point or check points which are required			
		ALL ADJ. Points	Colour Reproduction	Focus & Zoom Encoder	Other ADJ.
1	IC303(ROM), IC304(D/A)	○			
2	CCD Unit individual		○	○	
3	Camera Main C.B.A.	○			
4	Sensor C.B.A. without CCD		○	○	
5	Focus Encoder C.B.A.			○	
6	Lens Unit			○	
7	IC703			△	
8	IC104		○		HC, carrier Balance
9	IC711			○	ALC, Pedestal

○ mark .....Adjustment may be required.
△ mark .....Confirm adjustment necessity and adjust it, if necessary.
Colour Reproduction.....WB, Colour gain, colour phase adjustments.

Fig. C51

2-6-3. ELECTRICAL ADJUSTMENT FOR E.V.F SECTION

The following adjustments are for Electronic Viewfinder.

(1) Connect the Viewfinder plug to the E.V.F. connector on the unit.
(2) The camera circuit must be completely finished before viewfinder adjustments are made.

1. CENTERING ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
⊠	DEFLECTION YOKE CENTERING MAGNET	NO	REGISTRATION CHART
M. EQ.		SPEC.	
MONITOR TV, VIEWFINDER		CENTER THE PICTURE	

[Purpose]
Optimize E.V.F picture position.

[Symptom of Mis-adjustment]
E.V.F picture off center.

(1) Aim the camera at the registration chart.
(2) Adjust the Reflection Yoke Centering Magnets by turning them so that the picture on monitor TV is centered.

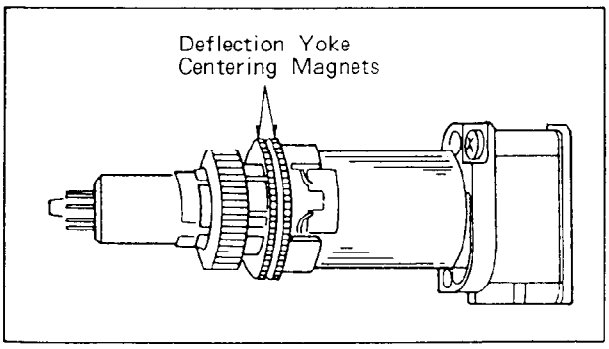


Fig. C52

2. FOCUS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
⊠	VR803	NO	BALL CHART
M. EQ.		**SPEC.**	
VIEWFINDER		BEST RESOLUTION	

[Purpose]
E.V.F focus adjustment.

[Symptom of Mis-adjustment]
The E.V.F is out of focus.

[Note]
VR803 : E.V.F C.B.A.

(1) Aim the camera at the Ball chart.
(2) Adjust the focus control(VR803) for best resolution in the viewfinder.

3. V.SIZE ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
⊠	VR801	NO	GRAY SCALE CHART
M. EQ.		**SPEC.**	
VIEWFINDER		VERTICAL SIZE IS FIXED	

[Purpose]
Set E.V.F vertical standard picture size.

[Symptom of Mis-adjustment]
The E.V.F vertical standard picture size is abnormal.

[Note]
VR801 : E.V.F C.B.A.

(1) Aim the camera at the gray scale chart.
(2) Adjust the Vertical Size(VR801) so the Vertical Size is correct and the picture does not roll as shown in Fig.C53.

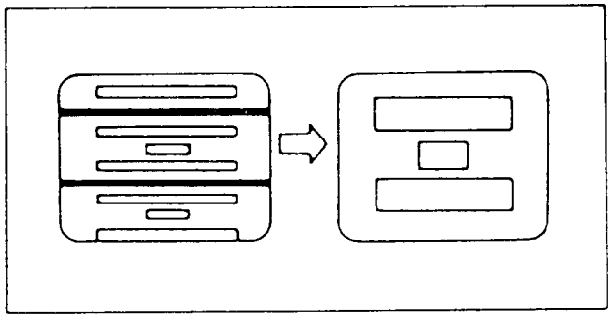


Fig. C53

4. BRIGHTNESS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
⊠	VR804	NO	GRAY SCALE CHART
M. EQ.		**SPEC.**	
VIEWFINDER		NATURAL GRADATION	

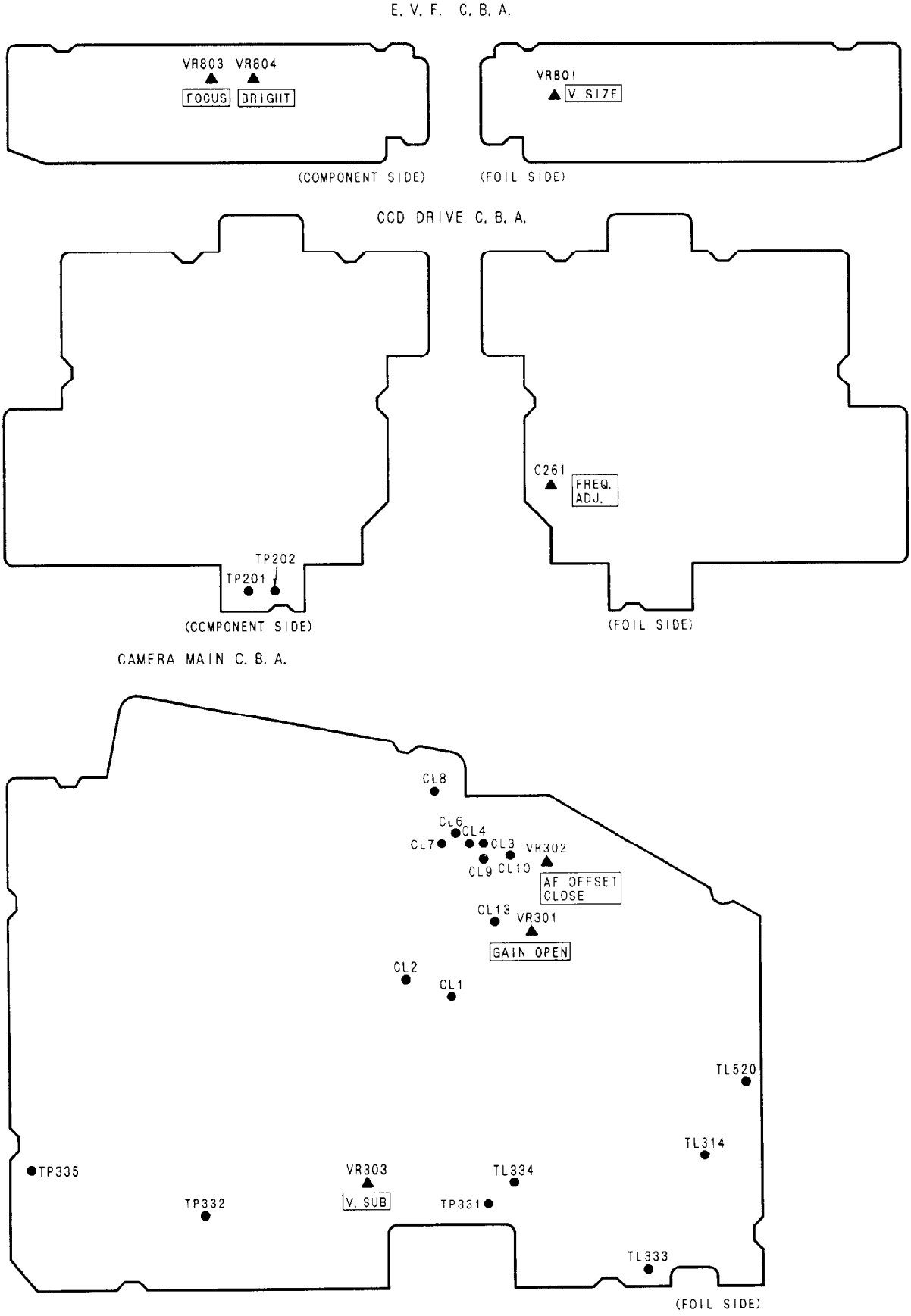
[Purpose]
E.V.F brightness level adjustment.

[Symptom of Mis-adjustment]
The E.V.F picture is too white or too black.

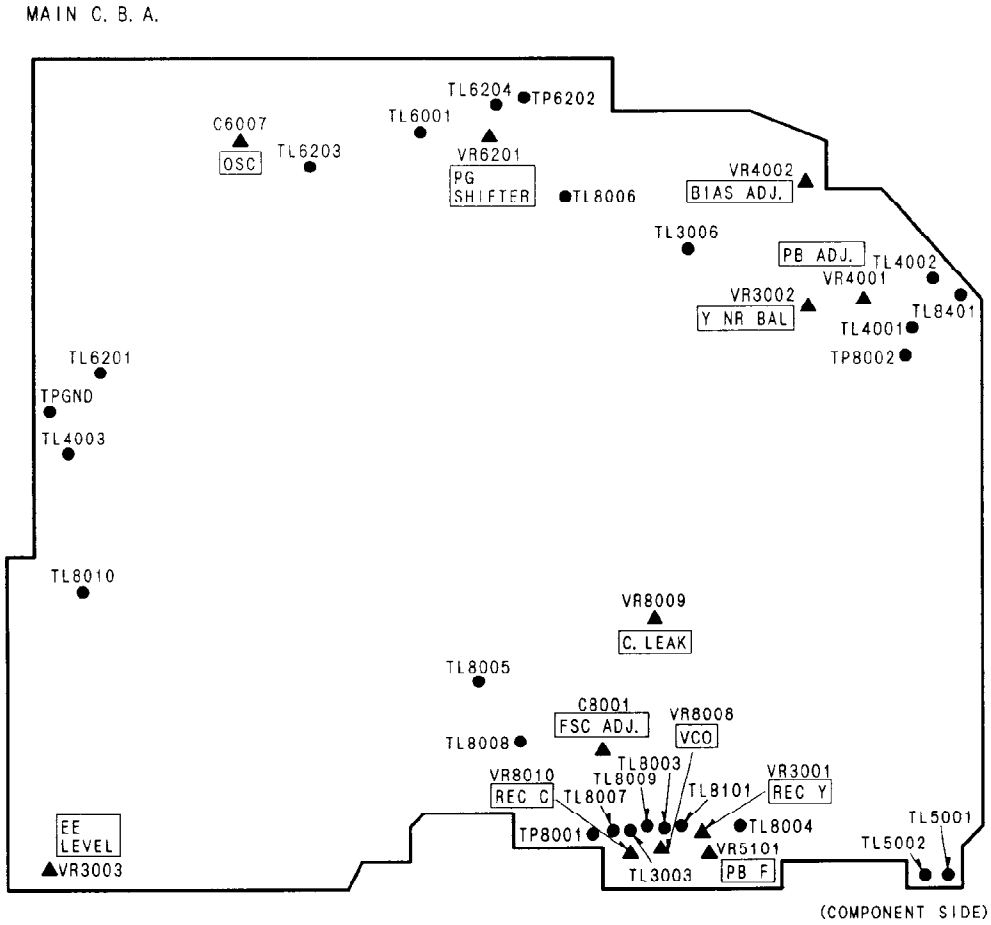
[Note]
VR804 : E.V.F C.B.A.

(1) Aim the camera at gray scale chart.
(2) Adjust the brightness control(VR804) so that the black and white bars in the E.V.F. screen are the same as they are in the monitor TV screen.

LOCATION OF TEST POINT & CONTROLS (1)



LOCATION OF TEST POINT & CONTROLS (2)



2-6-4. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOLS

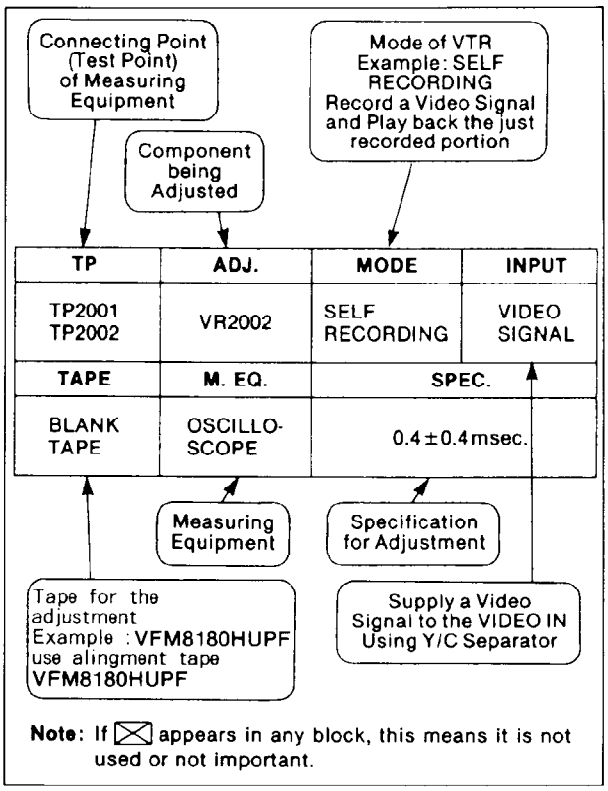
The following equipment is required for adjustment of the VTR section.

1. VTVM (Vacuum Tube Volt Meter)
   DVM (Digital Volt Meter)
   Voltage Range : 0.01~50V
2. Dual Trace Oscilloscope
   Voltage Range : 0.06~50V/div
   Frequency Range : 0~50MHz
   Probe : 10:1 or 1:1
3. Frequency counter
   Frequency Range : 0~10MHz
4. Signal Generator (Sinewave)
   Frequency Range : 0~10MHz
5. Video Sweep Generator
   Frequency Range :0~10MHz
6. Colour Monitor TV
7. Plastic Tip Driver
8. VHS-C Alignment Tape (VF8180HUPF)
9. VHS-C Blank Tape
10. Pattern Generator
11. Vectorscope

PREPARATION

1. Remove the casing panels.
   (Refer to the disassemble method)
2. Connect the extension cable if necessary.
   Refer to Technical Information.

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Component being Adjusted
Mode of VTR Example: SELF RECORDING Record a Video Signal and Play back the just recorded portion
TP
ADJ.
MODE
INPUT
TP2001 TP2002
VR2002
SELF RECORDING
VIDEO SIGNAL
TAPE
M. EQ.
SPEC.
BLANK TAPE
OSCILLO-SCOPE
0.4±0.4msec.
Measuring Equipment
Specification for Adjustment
Tape for the adjustment Example : VFM8180HUPF use alingment tape VFM8180HUPF
Supply a Video Signal to the VIDEO IN Using Y/C Separator
Note: If ⊠ appears in any block, this means it is not used or not important.

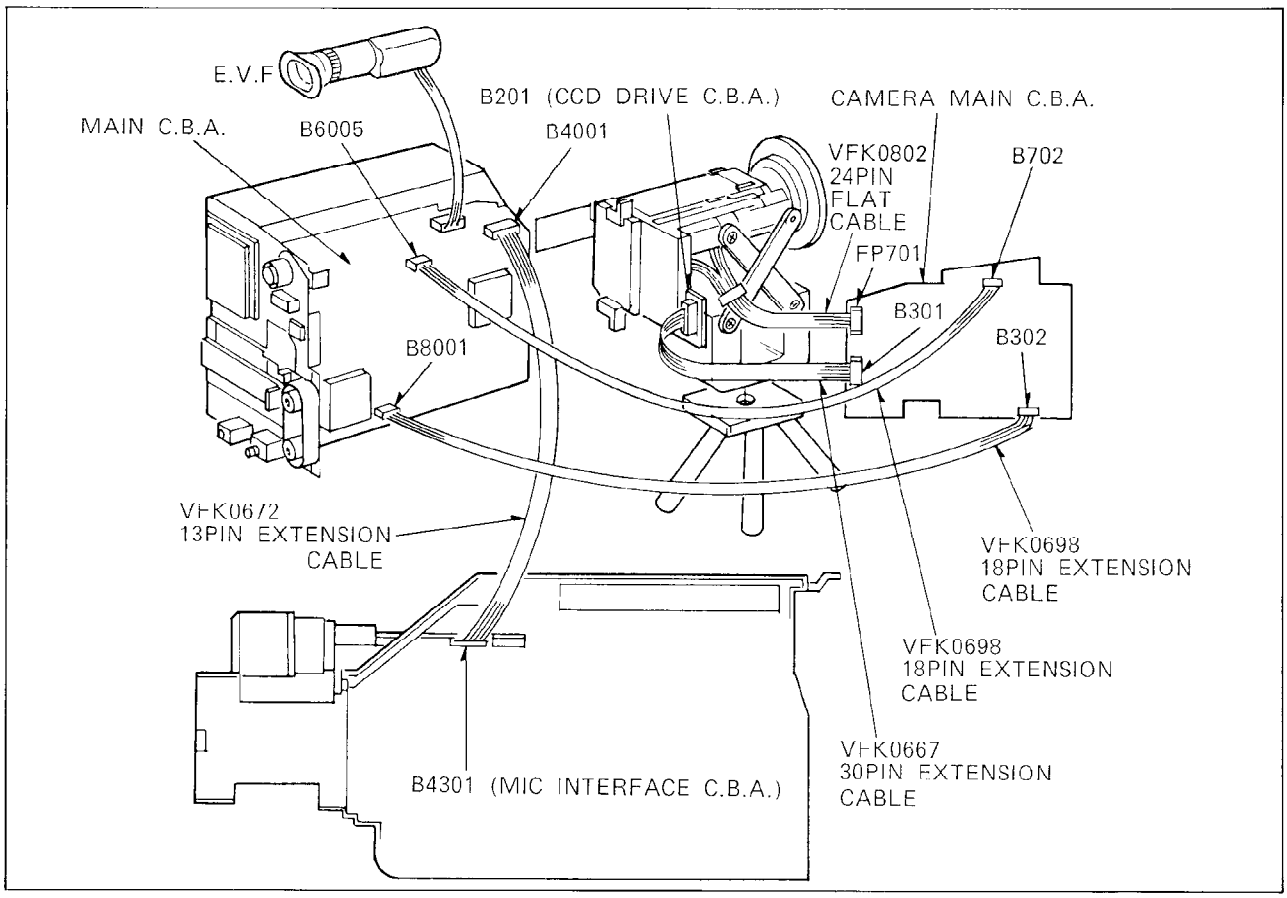


Fig. V1

SERTO SECTION

1. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP6202 VIDEO OUT	VR6201	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE (VFM8180HUPF)	OSCILLO-SCOPE	6.5H+−0.5H	

[Purpose]
Determine the head switching point during playback.

[Symptom of Mis adjustment]
May cause head switching noise and/or vertical jitter in the picture.

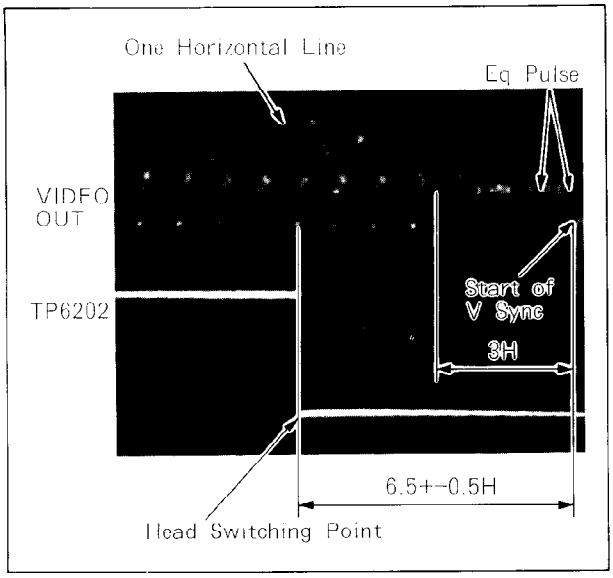


Fig. V2

LUMINANCE & CHROMINANCE SECTION

2. E-E LEVEL ADJUSTMENT

TP	ADJ.	MODE	CHART
VIDEO OUT	VR3003	STOP	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	A=1.0+−0.05Vp-p	

[Purpose]
Set the Optimum E-E level of the Luminance level.

[Symptom of Mis-adjustment]
The picture is sometimes too dark or too bright.

[Note]
(1) Video out should be terminated with 75ohm.
(2) Perform this adjustment after finishing the adjustment for the Camera Section.

(1) Aim the camera at colour bar chart
(2) Connect the oscilloscope to video output.
(3) Adjust the VR3003 so that Y output (White portion of colour bar) becomes 1.0+−0.05Vp-p

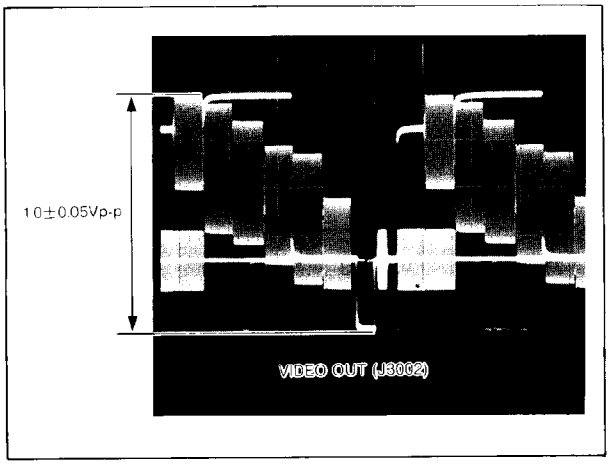


Fig. V3

3. Fsc ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL8009	C8001	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	FREQUENCY COUNTER	4433619+−120Hz	

(1) Connect the frequency counter to TL8009.
(2) Adjust the C8001 so that frequency becomes 4433619+−120Hz.

4. VCO FREE-RUN FREQUENCY ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL8003	VR8008	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUENCY COUNTER	613 + −7.5KHz	

[Purpose]
To adjust the frequency of VCO to 613KHz.

[Symptom of Mis-adjustment]
The chroma signal will not be turned properly resulting in colour loss.

(1) Connect a jumper wire between TL8001, TL8101 and TL8010(5V).
(2) Connect the frequency counter to TL8003.
(3) Adjust the VR8008 so that frequency becomes 613+−7.5KHz.

5. MAIN BM CARRIER LEAK ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL8008	VR8009	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	"A" IS MINIMIZED	

[Note]
Remove the Camera Main C.B.A.

(1) Connect a jumper wire between TL8006 and TL8010(5V) in VTR mode.
(2) Connect the oscilloscope to TL8008.
(3) Adjust the VR8009 so that "A" is minimized.

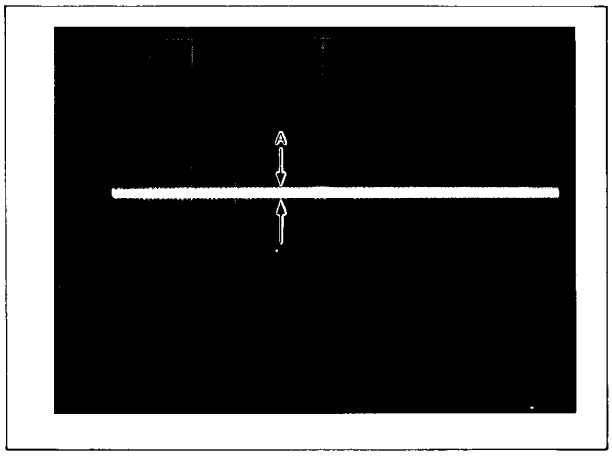


Fig. V4

6. RECORDING CURRENT ADJUSTMENT

[Note]
Perform this adjustment after finishing the Burst Level Adjustment.

6-(1). LUMINANCE RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL5002 (HOT) TL5001 (GND)	VR3001	SELF RECORDING	
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	A−110 + −5mVp-p	

[Purpose]
Set the optimum Recording Luminance Level.

[Symptom of Mis-adjustment]
If the Record Luminance Level is too high, video may over load.
If the Record Luminance Level is too low, the S/N ratio deteriorates.

[Note]
When turning off the FADE, push the [SHIFT1] + [5] keys together on the E.V.R.

(1) Cut off the incoming light to lens unit. (When using the E.V.R., push the [SHIFT1] + [4] keys together to turn on the FADE.)
(2) Connect the oscilloscope to TL5002(HOT) and TL5001(GND).
(3) Make recording in SP mode.
(4) Adjust the VR3001 so that the luminance level becomes 110+−5mVp-p.

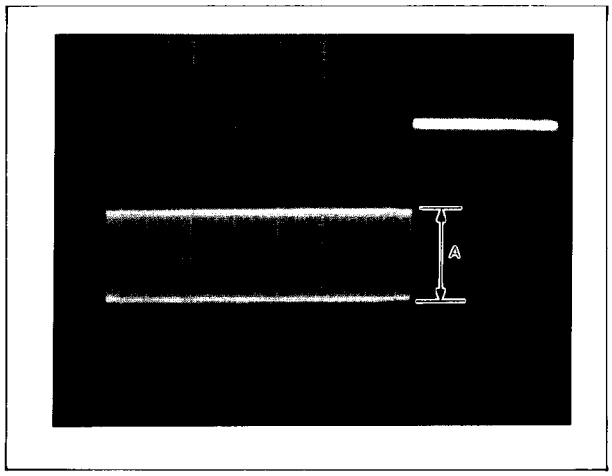


Fig. V5

6-(2). CHROMINANCE RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL5002 (HOT) TL5001 (GND)	VR8010	SELF RECORDING	
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	A=12+−1mVp-p	

[Purpose]
Set the optimum Record Chroma Level.

[Symptom of Mis-adjustment]
If the Record Chroma Level is too high, Beats may be seen in the picture.
If the Record Chroma Level is too low, the colour may be degarded.

[Note]
When turning off the FADE, push the [SHIFT1] + [5] keys together on the E.V.R.

(1) Cut off the incoming light to lens unit. (when using the E.V.R., push the [SHIFT1] + [D] keys together to turn on the FADE.)
(2) Connect a jumper wire between TL3003 and TL8010(5V) to eliminate the luminance signal.
(3) Connect the oscilloscope to TL5002(HOT) and TL5001(GND).
(4) Make recording in SP mode.
(5) Adjust the VR8010 so that the chrominance level becomes 12+−1mVp-p.

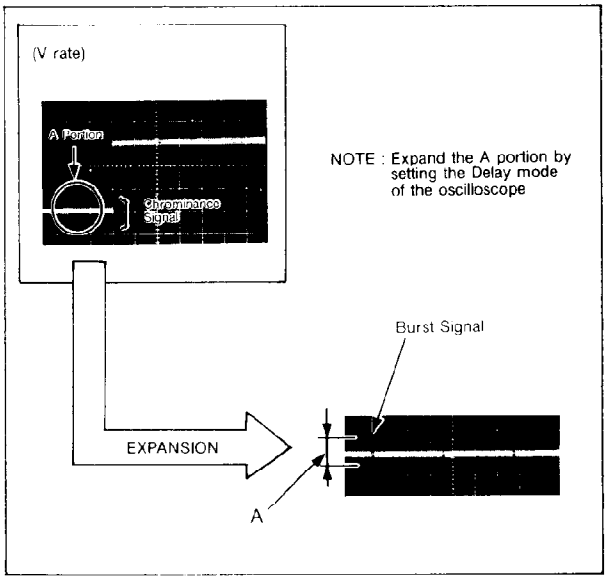


Fig. V6

7. YNR ADJUSTMENT

TP	ADJ.	MODE	CHART
TL3006	VR3002	SELF RECORDING	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	"A" IS MINIMIZED (LESS THAN 100 mV)	

[Purpose]
Improve the overall S/N ratio especially in the low frequency-quinsy component.

[Symptom of Mis-adjustment]
The S/N ratio will be lower.

(1) Aim the camera at colour bar chart.
(2) Record it in SP mode.
(3) Connect the oscilloscope to TL3006.
(4) Play back just recorded portion.
(5) Adjust VR3002 so that signal is minimized.

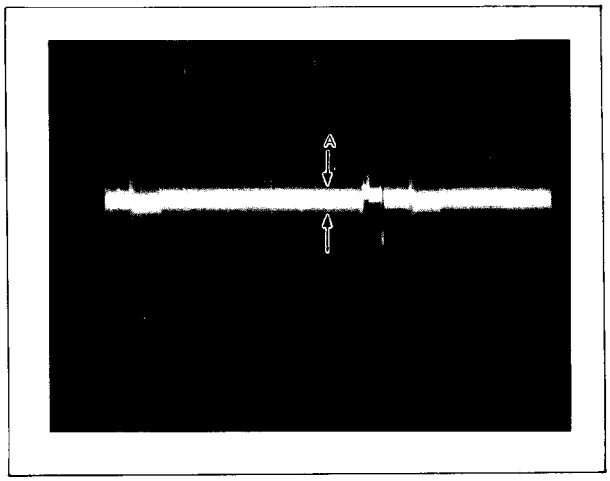


Fig. V7

8. HEAD FREQUENCY RESPONSE ADJUSTMENT FOR VHS MODE

TP	ADJ.	MODE	INPUT
LINE OUT	VR5101	SELF RECORDING (SP)	VIDEO SWEEP SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	VIDEO SWEEP/ OSCILLO-SCOPE	A=0+−1dB (56~71%)	

[Purpose]
To improve the video frequency response level.

[Symptom of Mis-adjustment]
Video Frequency Response will be deteriorated.
Picture will be noisy.

(1) Set the sweep Generator output as shown below.

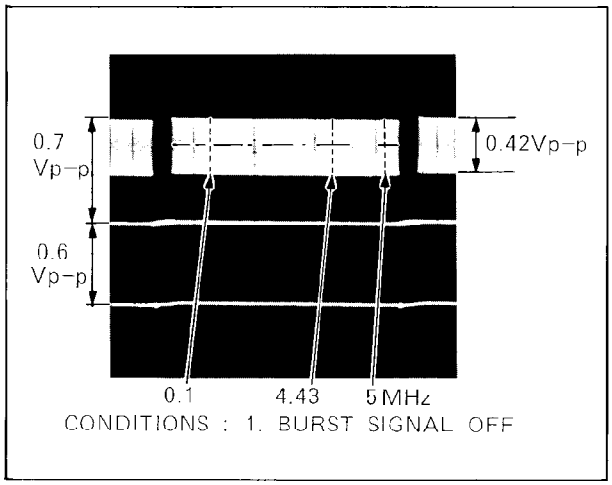


Fig. V8

(2) Supply sweep signal to B6007-PIN8.
(3) Record it for a while in SP mode.
(4) Play back just recorded portion.
(5) Adjust VR5101 so that level at 2MHz is within spec. as shown in Fig.V9.

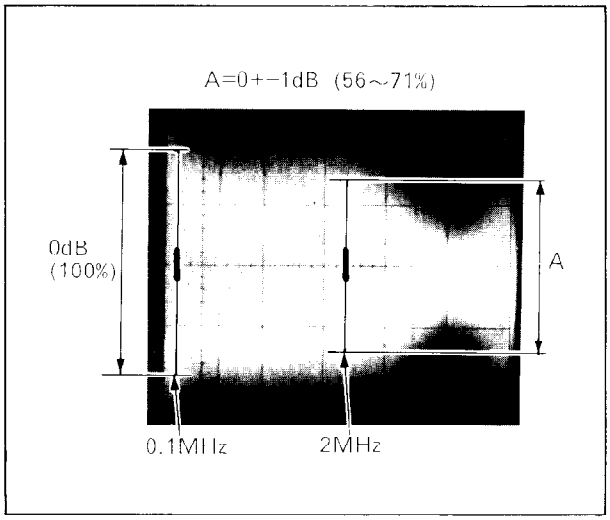


Fig. V9

AUDIO SECTION

9. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL4001 (HOT) TL4002 (GND)	VR4002	RECORDING	
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	2.7mVrms+−0.1mVrms	

[Purpose]
Optimize the Audio Record Bias.

[Symptom of Mis-adjustment]
If the Audio Record Bias is too low, High frequencies are increased resulting in distortion.
If the Audio Record Bias is too high, High frequencies are attenuated.

10. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR4001	SELF RECORDING (SP)	1kHz AUDIO −60dBV SIGNAL/ VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	SIGNAL GENERA-TOR/D.V.M.	PB LEVEL = −8dBV ±0.5dB	

[Purpose]
To align the playback level of Audio signal with the recording (E-E) Level.

[Symptom of Mis-adjustment]
If the playback Level is too low, Audio output level is attenuated. if the playback level is too high, Audio output level is inadequate.

(1) Supply the audio signal(1KHz/−60dBV sine-wave) to audio circuit through the MIC Input jack.
(2) Adjust the VR4001 so that the Playback level become −8dBV+−0.5dB.

SYSTEM CONTROL SECTION

11. OSD DISPLAY POSITION ADJUSTMENT

TP	ADJ.	MODE	CHART
MONITOR PICTURE	C6007	STOP	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
	MONITOR TV	SHOWN BELOW	

[Purpose]
Optimum the character position.

[Symptom of Mis-adjustment]
Character position is changed from center.

(1) Connect the E.V.F. unit.
(2) Aim the camera at colour bar.
(3) Place the unit at OSD mode.
(4) Adjust the C6007 so that indication on the monitor is located as shown in Fig.V10.

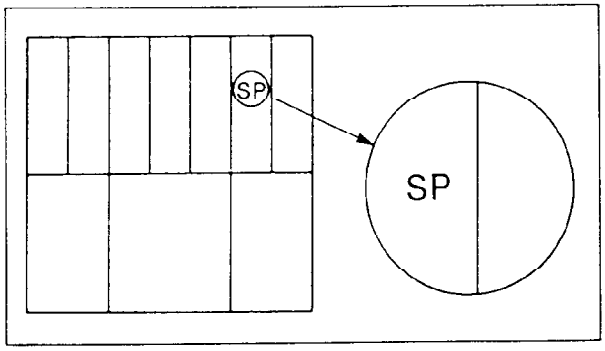
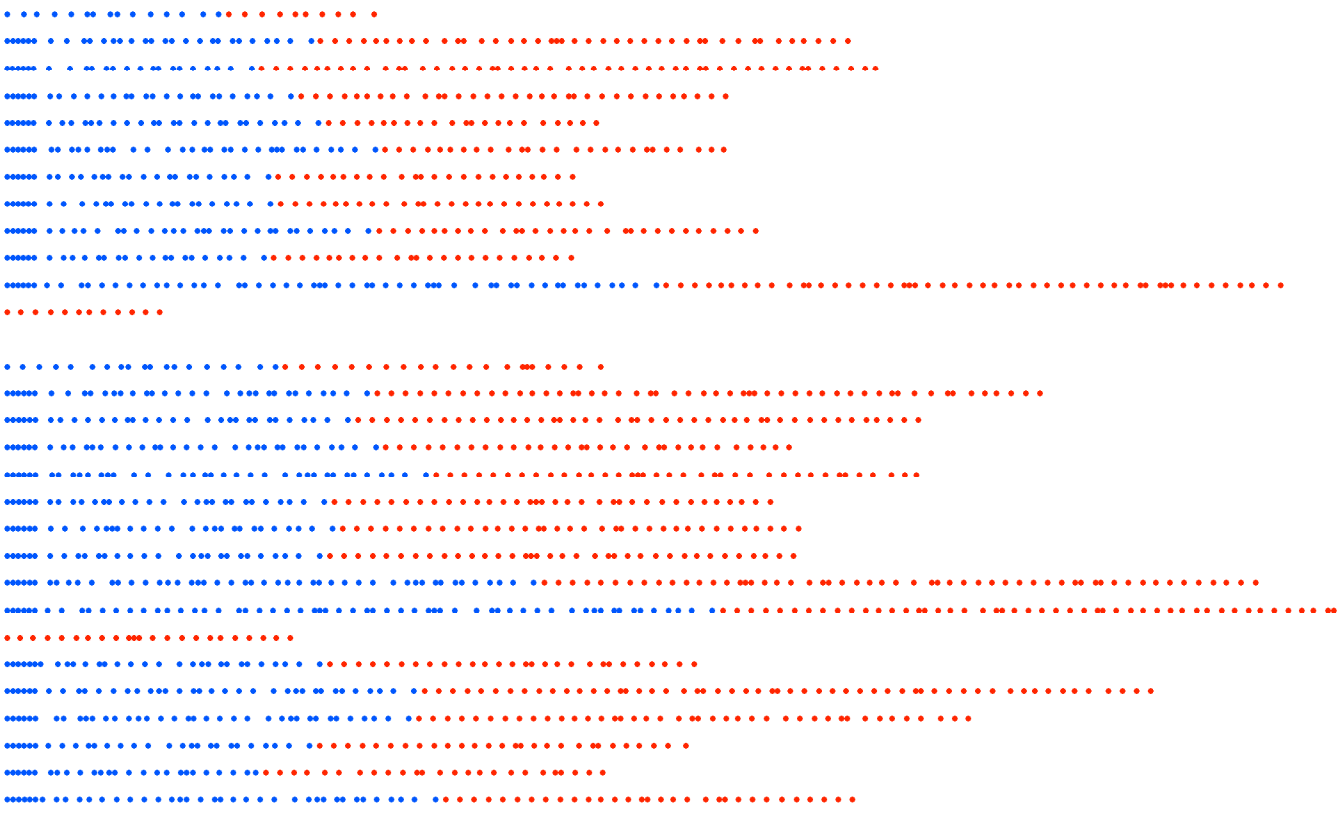
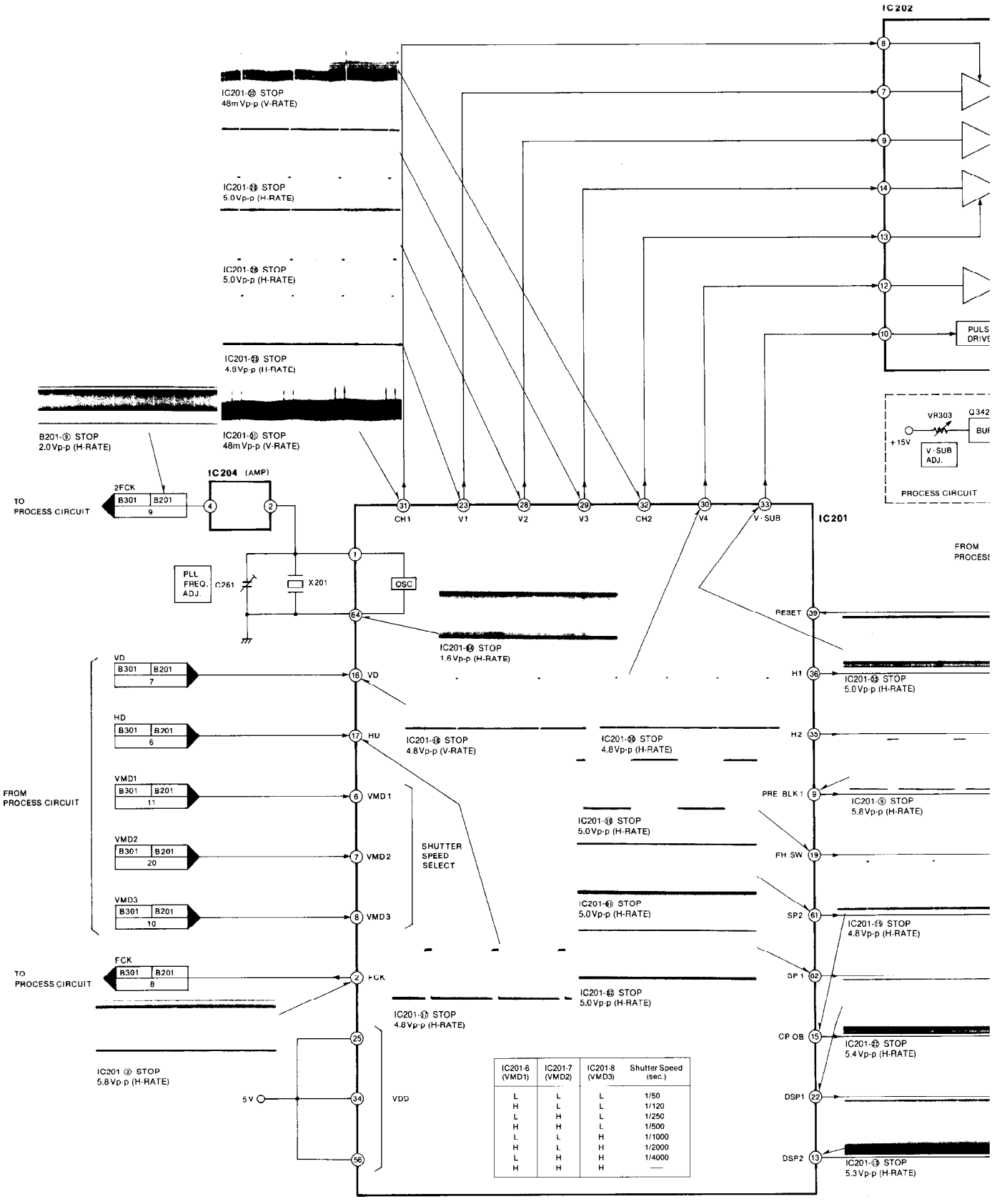


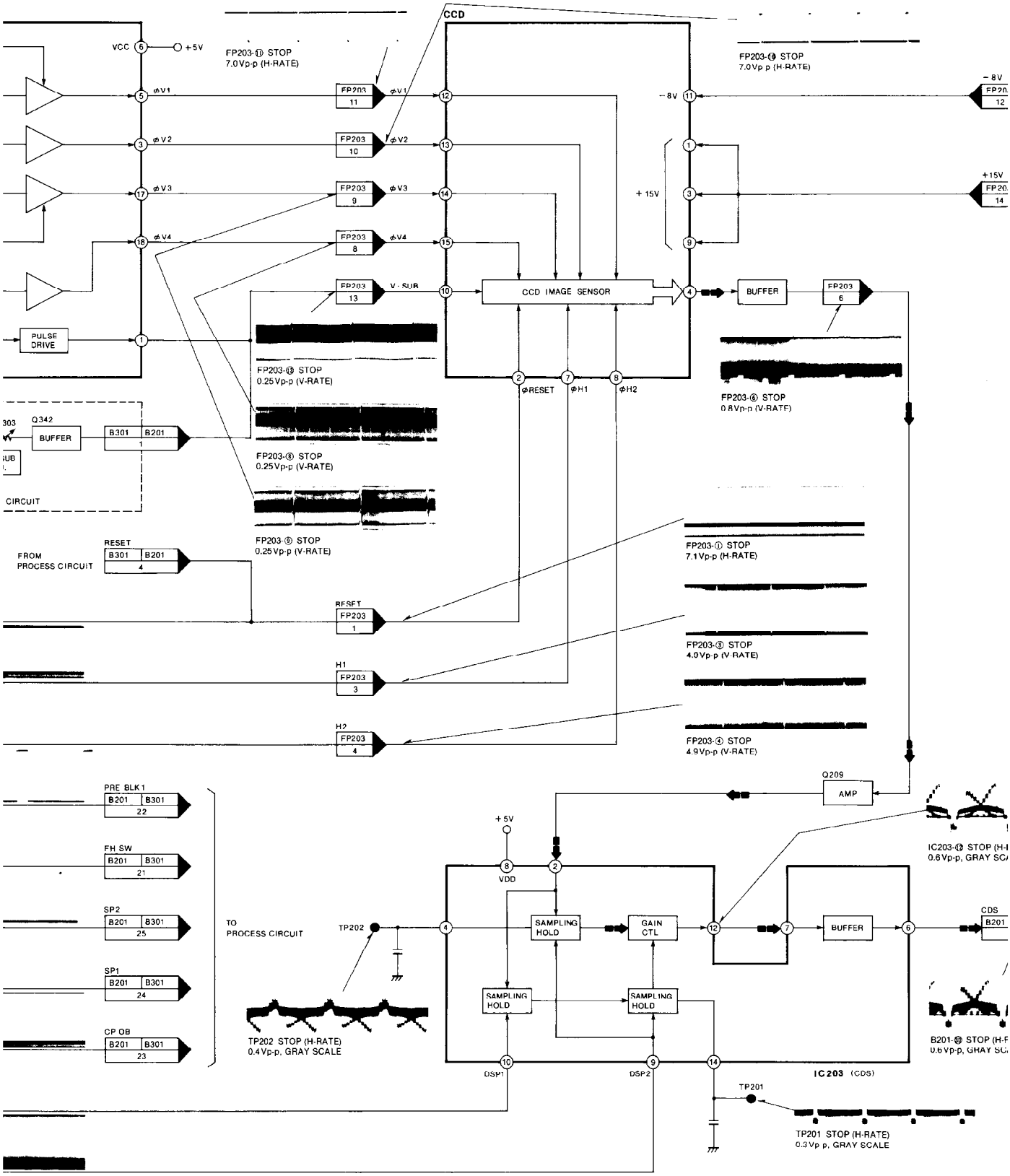
Fig. V10

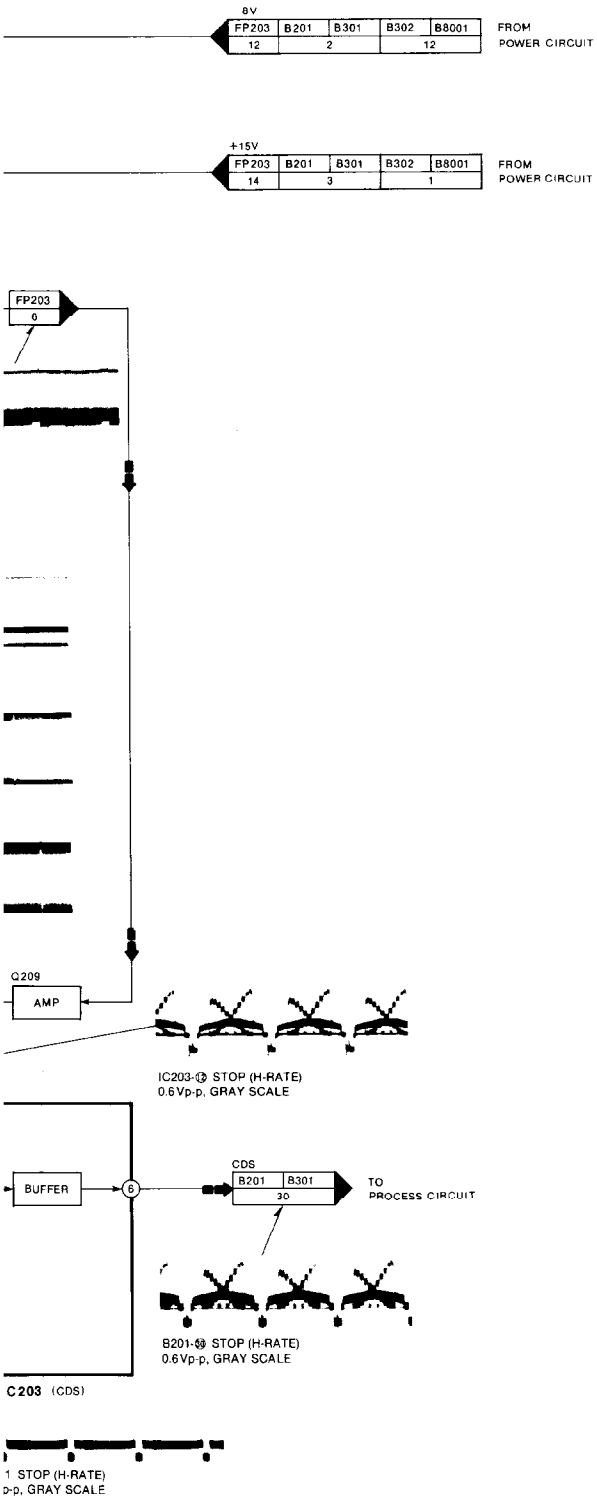


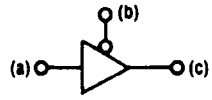
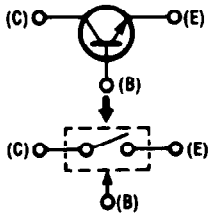
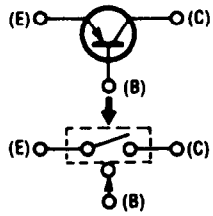
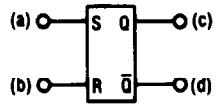
SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS
3-1. CCD DRIVE BLOCK DIAGRAM



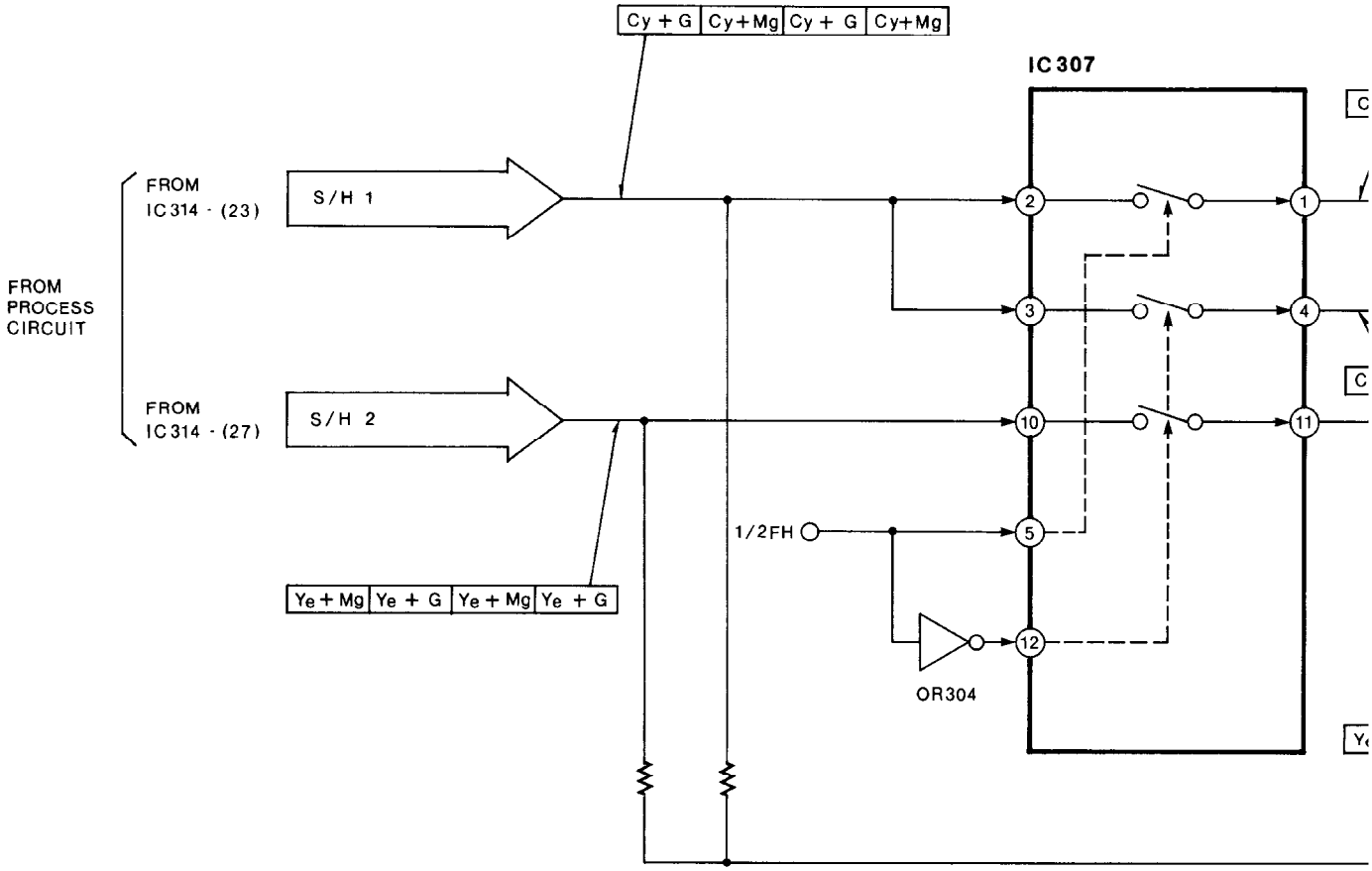
PRE VIDEO SIGNAL

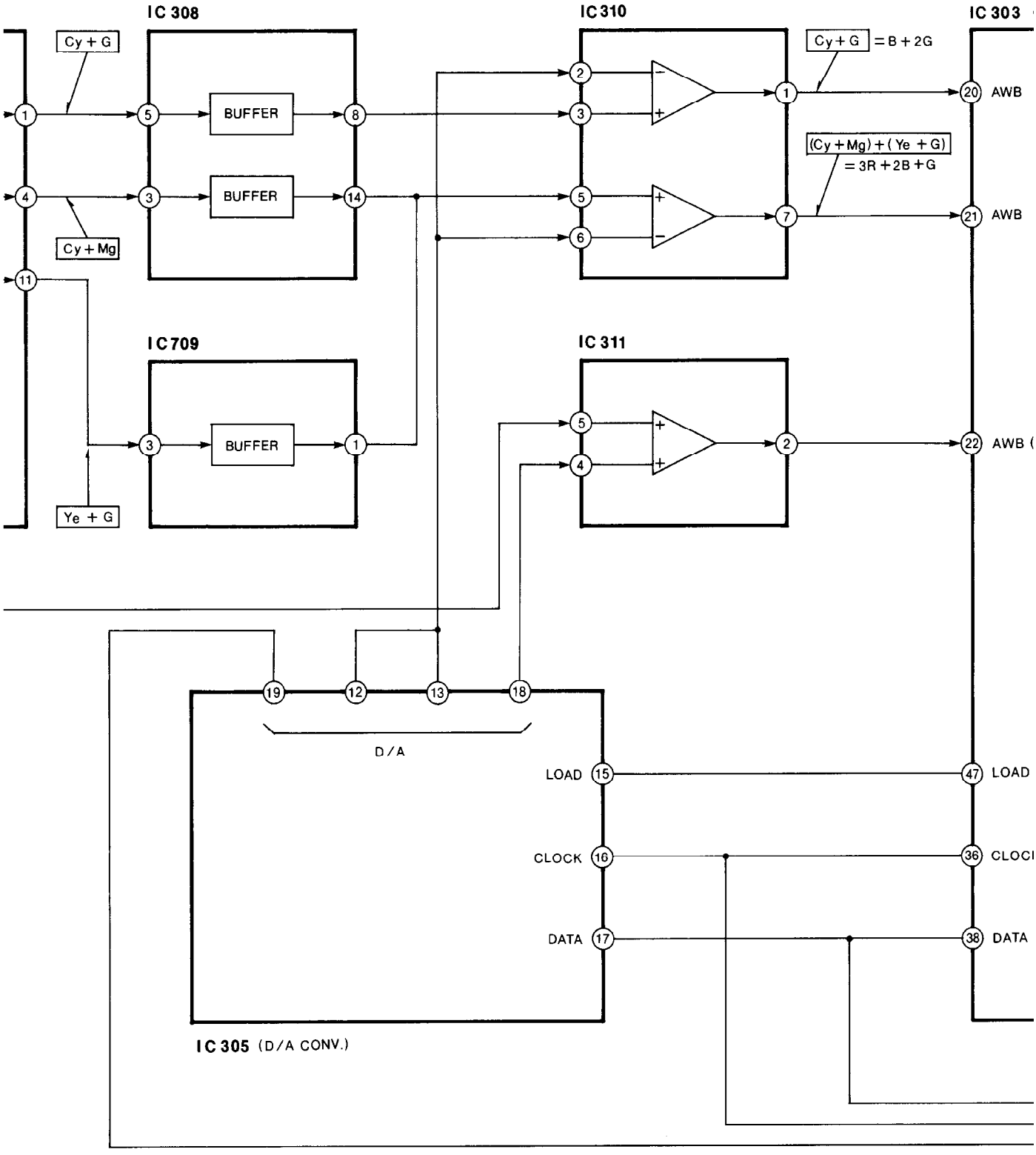


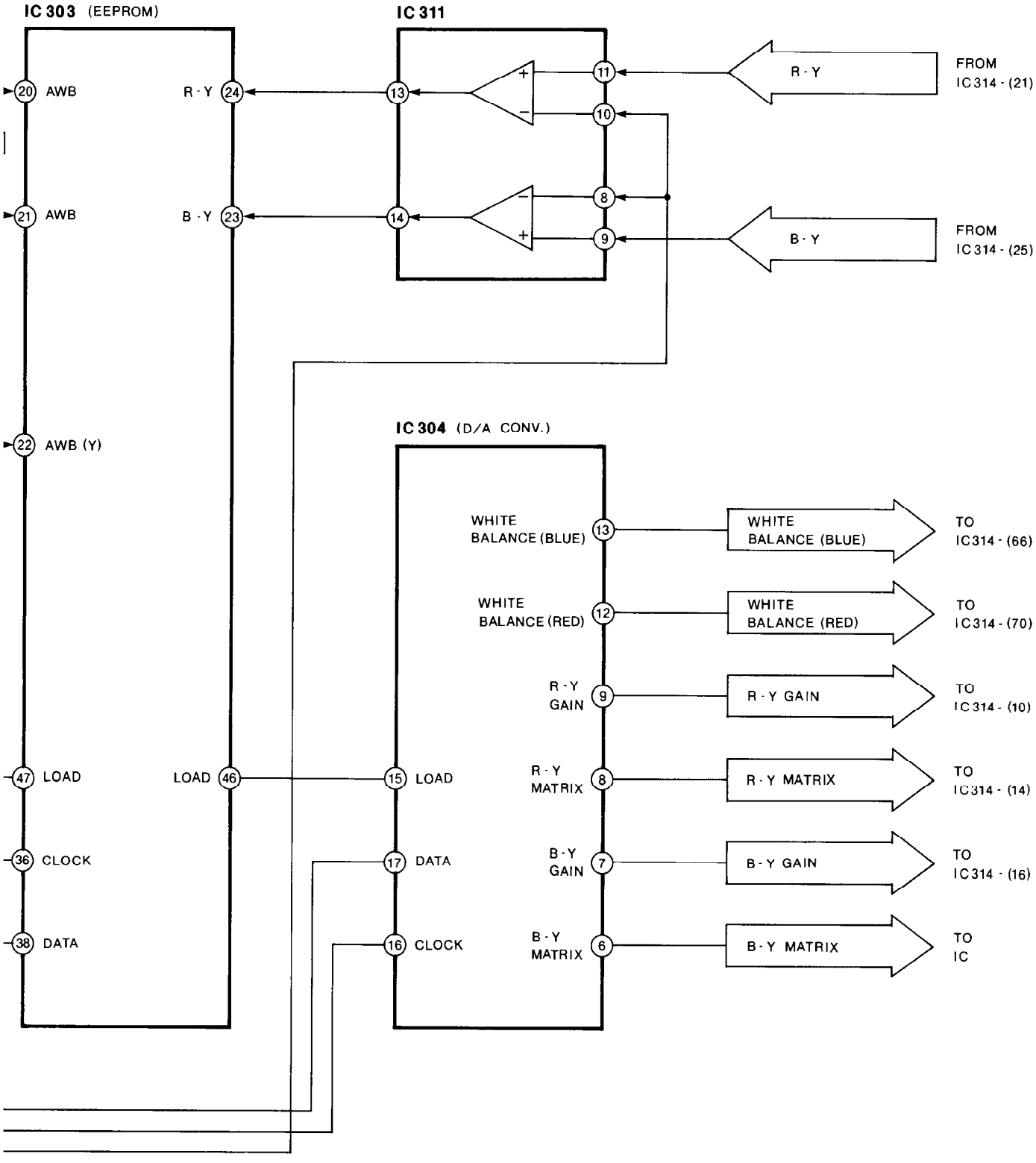


SYMBOL	TRUTH VALUE TABLE
INVERTER	IN (a) H L OUT (b) L H
COMPARTOR	IN (a)/(b) (a)>(b) (a)<(b) OUT (c) H L
AND CIRCUIT	IN (a) L L H H (b) L H L H OUT (c) L L L H
OR CIRCUIT	IN (a) L L H H (b) L H L H OUT (c) L H H H
THREE STATES BUFFER 	IN (a) H L H or L (b) L L H OUT (c) H L ※ ※ High Impedance
TR. SW (NPN TYPE) 	BASE H L TR. SW ON OFF
TR. SW (PNP TYPE) 	BASE H L TR. SW OFF ON
R-S TYPE FLIP-FLOP 	IN (a) L L ⎍ (b) L ⎍ L OUT (c) ※ L H (d) ◆ H L ※ Initial condition is maintained. ◆ Initial condition is reversed.

3-2. AWB BLOCK DIAGRAM

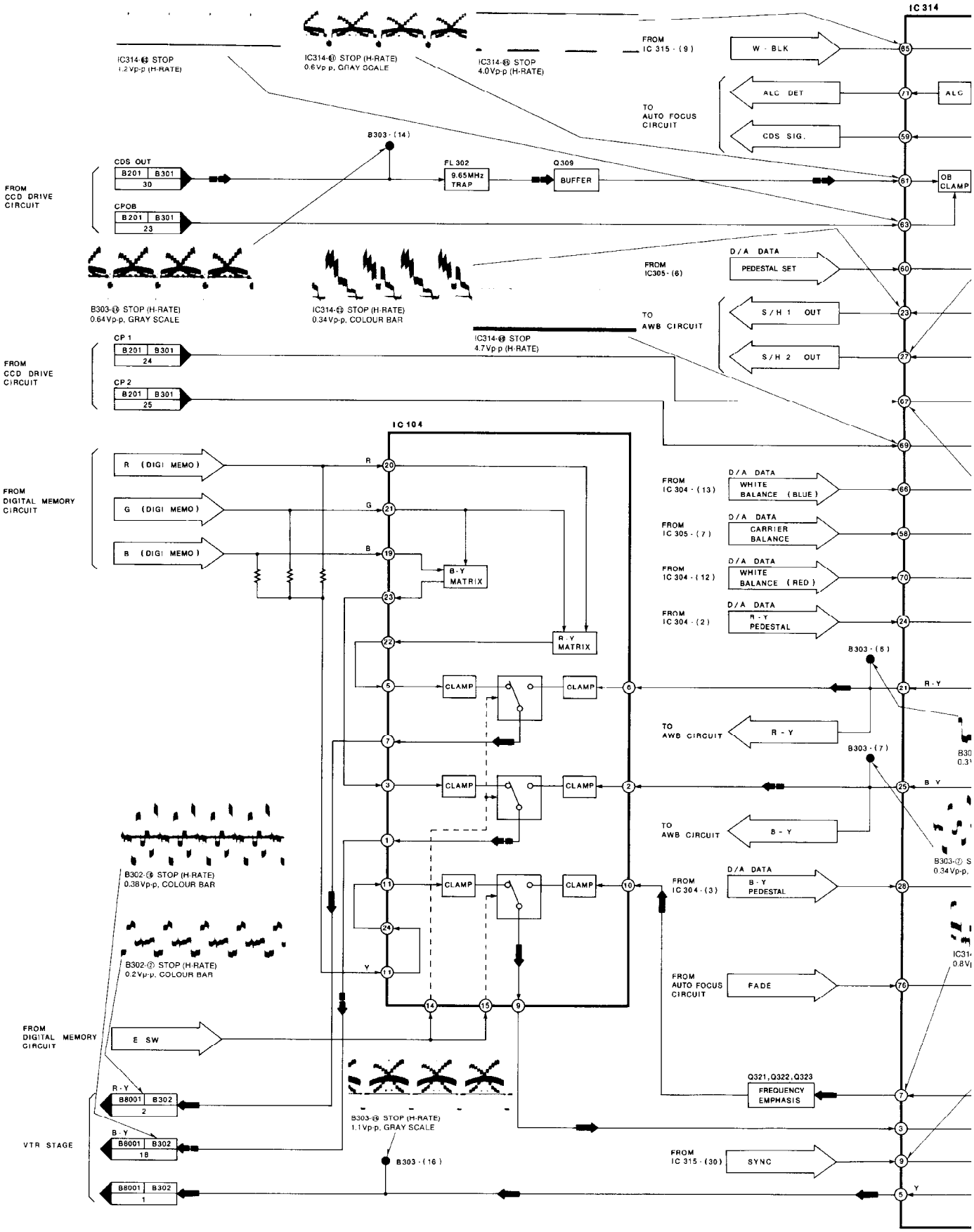



IC 308
IC 310
IC 303
Cy + G
Cy + G = B + 2G
BUFFER
BUFFER
(Cy + Mg) + (Ye + G)
= 3R + 2B + G
Cy + Mg
AWB
AWB
IC 709
IC 311
BUFFER
Ye + G
AWB (
D / A
LOAD
LOAD
CLOCK
DATA
DATA
IC 305 (D/A CONV.)

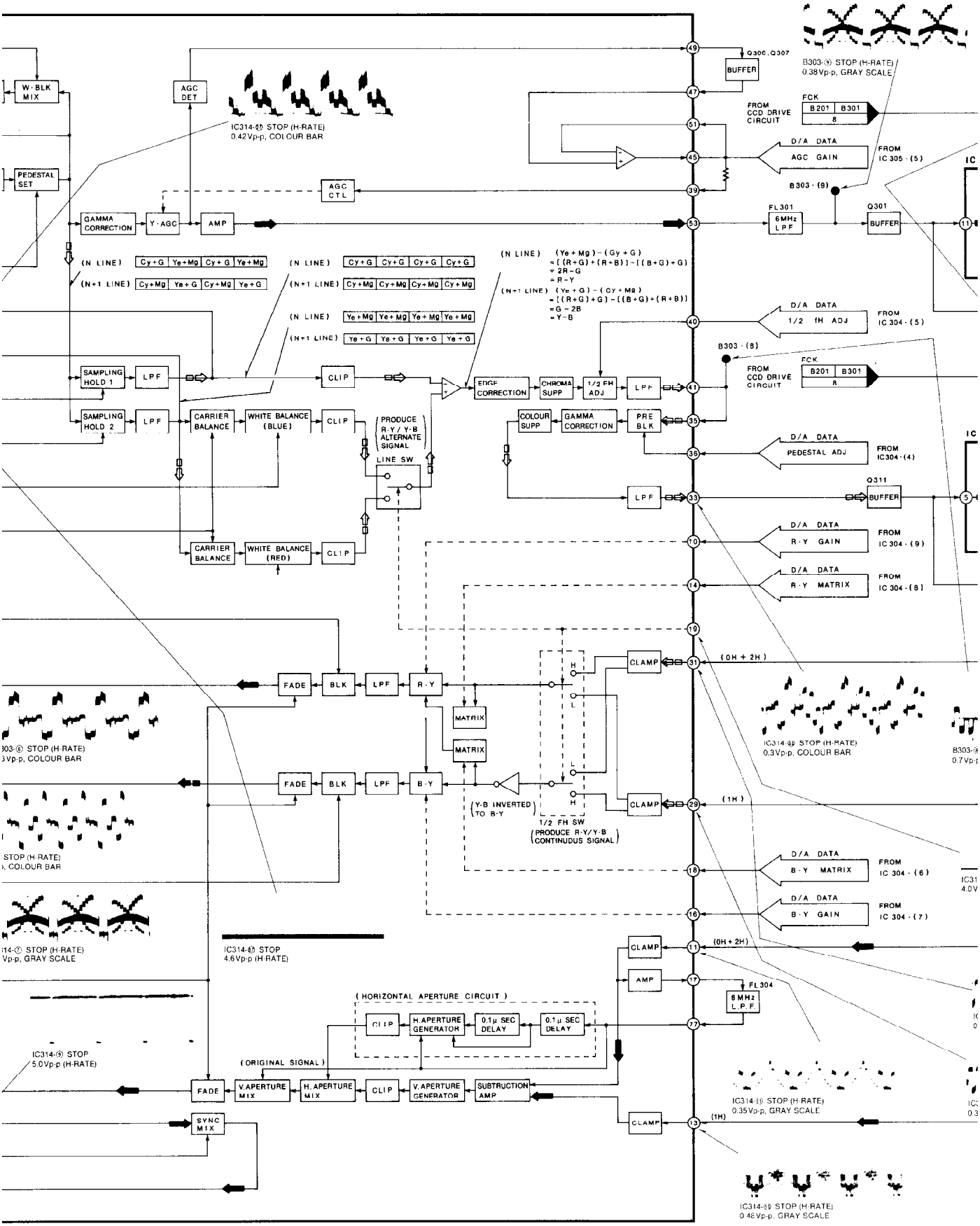

IC 303 (EEPROM)
IC 311
20 AWB
21 AWB
22 AWB (Y)
47 LOAD
36 CLOCK
38 DATA
R · Y 24
B · Y 23
LOAD 46
13
14
11
10
8
9
R · Y
B · Y
FROM IC314 - (21)
FROM IC314 - (25)
IC 304 (D/A CONV.)
15 LOAD
17 DATA
16 CLOCK
WHITE BALANCE (BLUE) 13
WHITE BALANCE (RED) 12
R · Y GAIN 9
R · Y MATRIX 8
B · Y GAIN 7
B · Y MATRIX 6
WHITE BALANCE (BLUE)
WHITE BALANCE (RED)
R · Y GAIN
R · Y MATRIX
B · Y GAIN
B · Y MATRIX
TO IC314 - (66)
TO IC314 - (70)
TO IC314 - (10)
TO IC314 - (14)
TO IC314 - (16)
TO IC

3-3. PROCESS BLOCK DIAGRAM

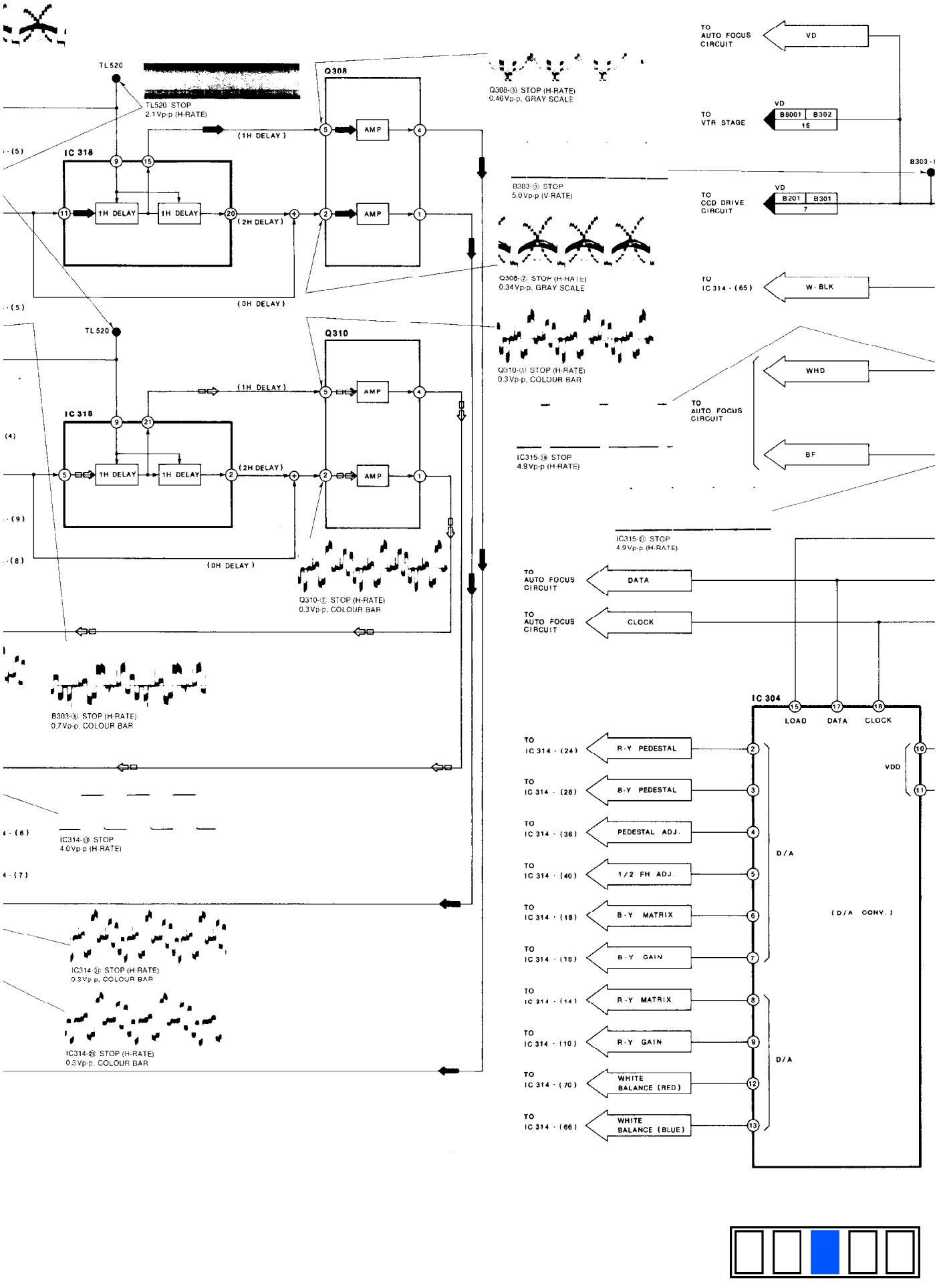
PRE VIDEO SIGNAL

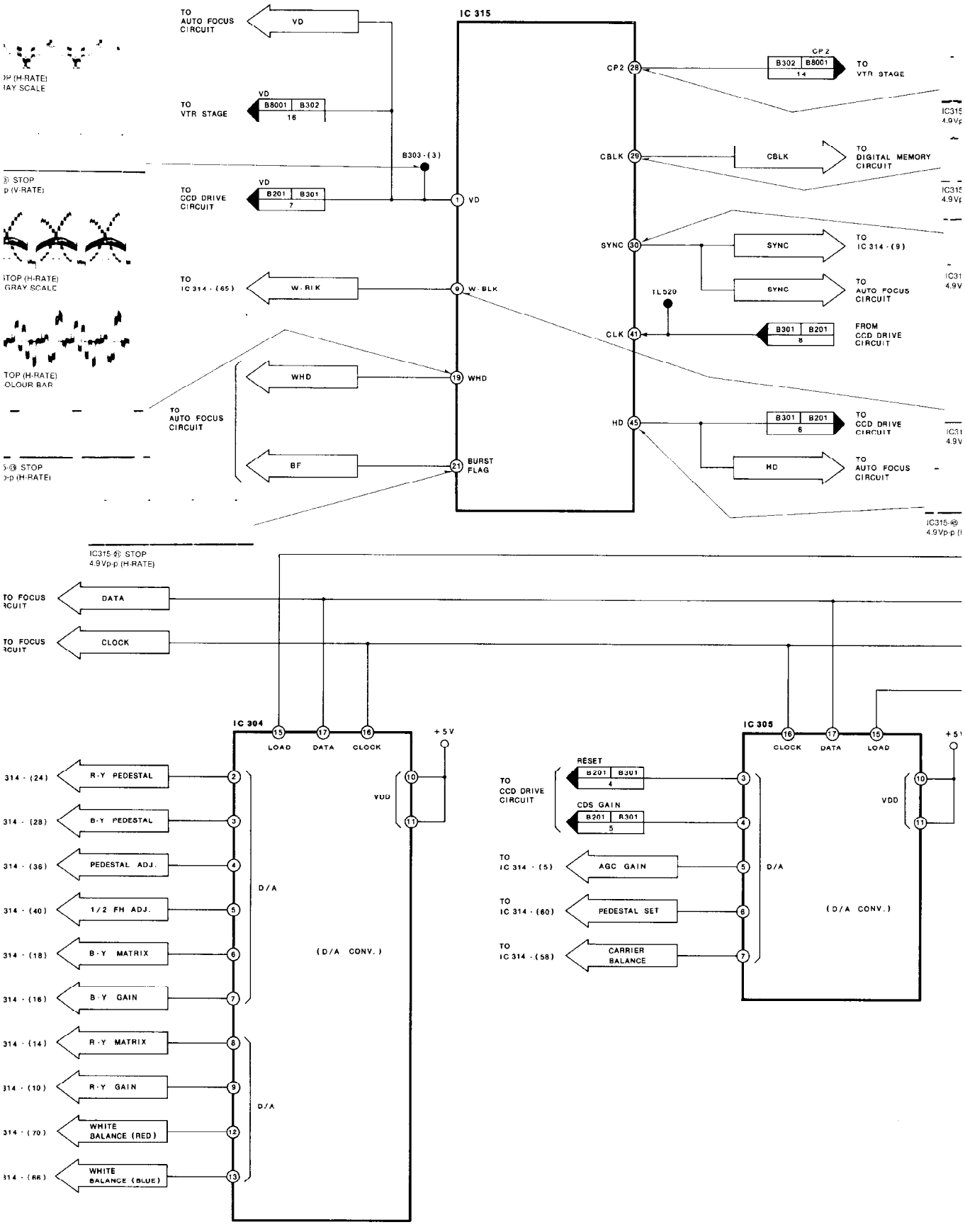


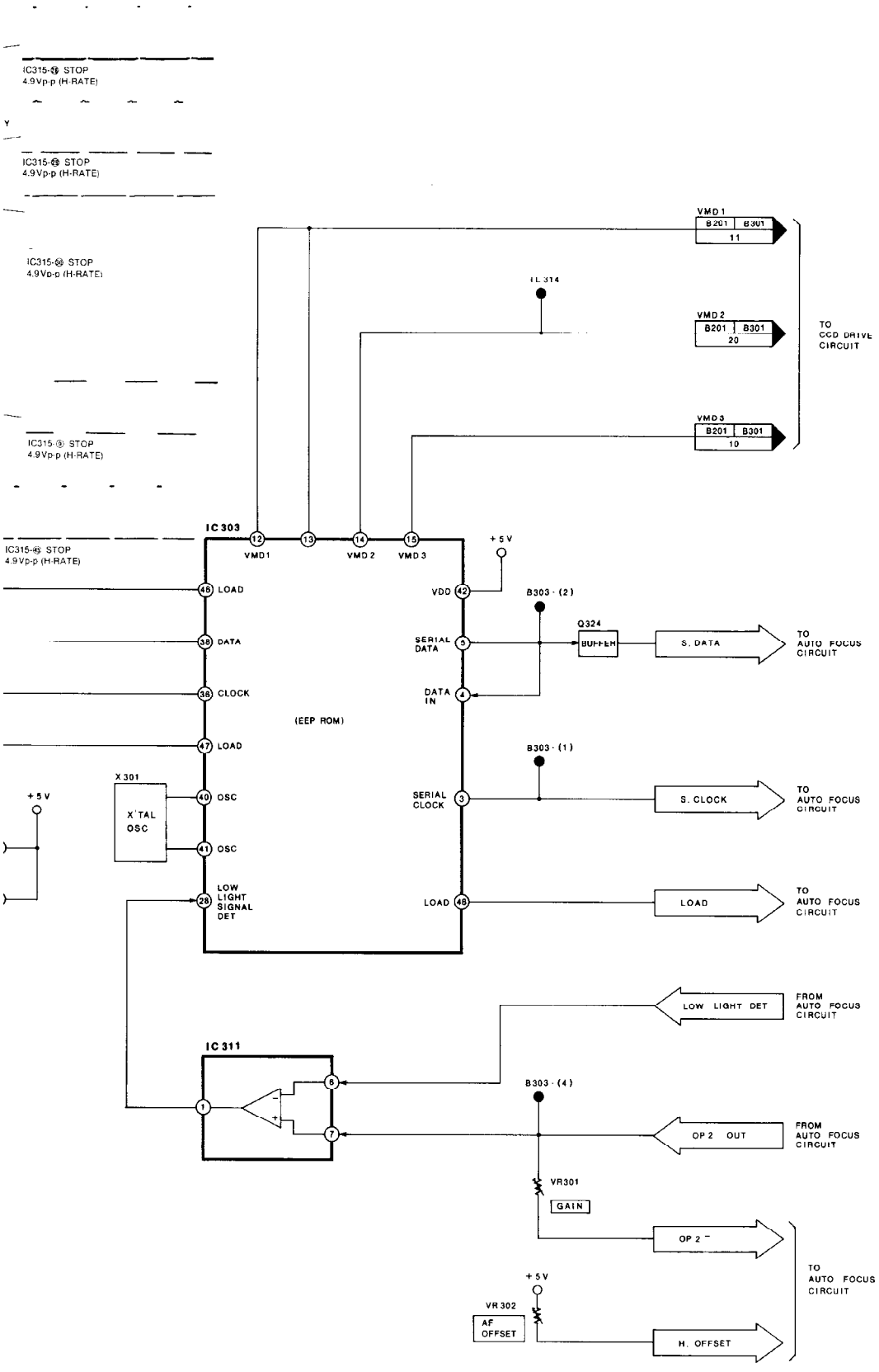
UMINANCE SIGNAL ⇦▭ R-Y/B-Y COMPOSITE SIGNAL ⬅▬ R-Y SIGNAL ⬅■



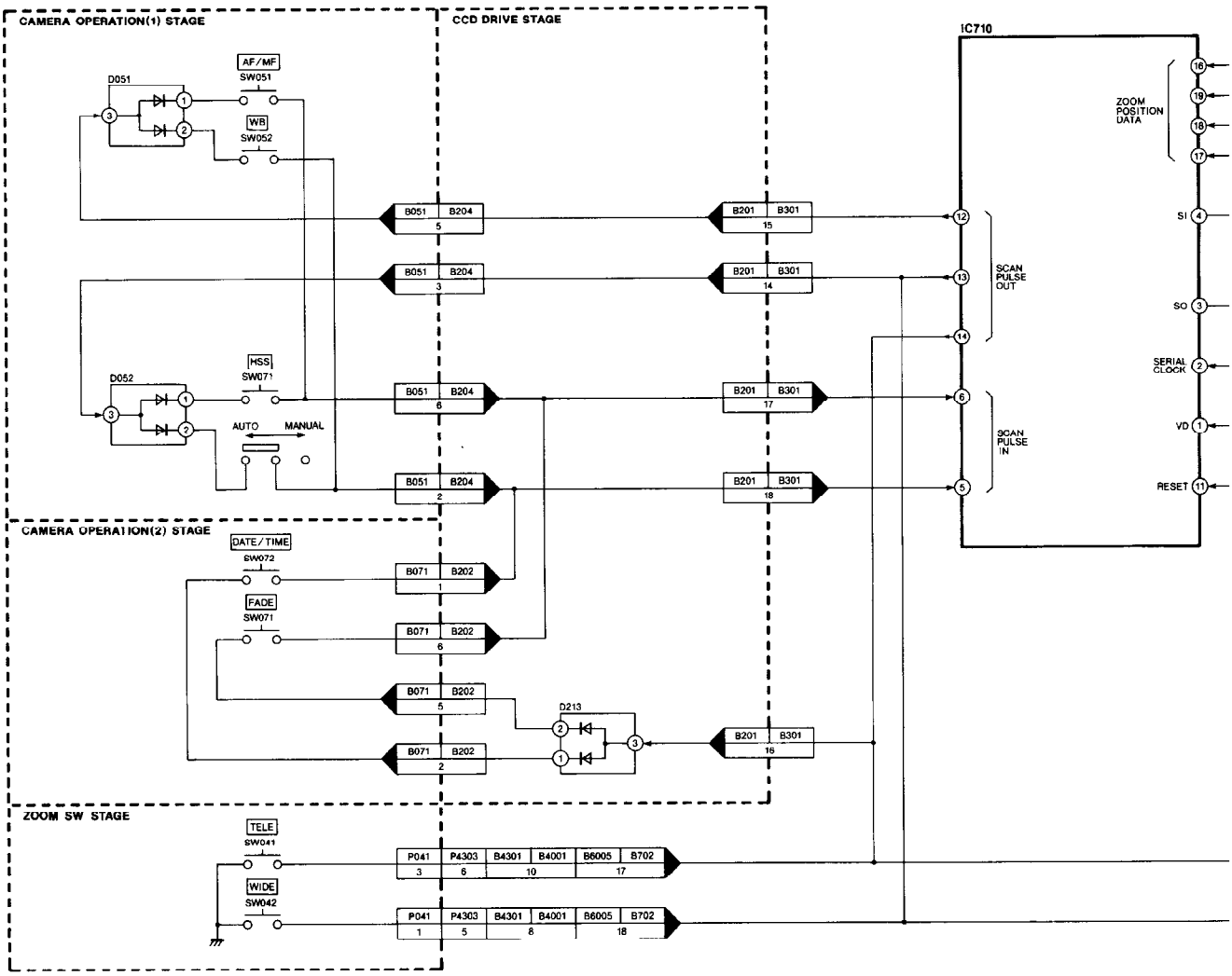
B-Y SIGNAL

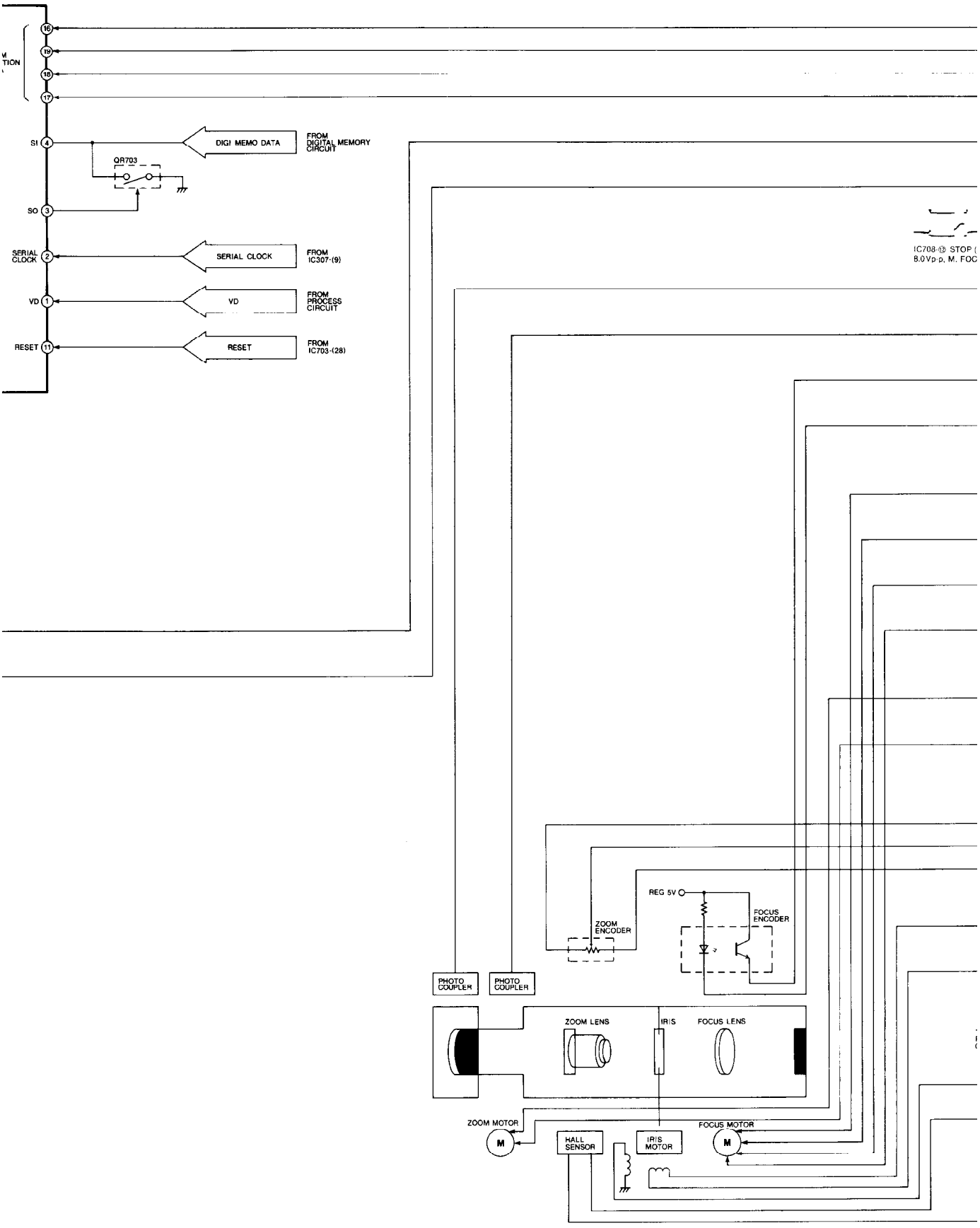

TL520
TL520 STOP
2.1Vp-p (H-RATE)
Q308
IC 318
1H DELAY
1H DELAY
(1H DELAY)
(2H DELAY)
(0H DELAY)
AMP
AMP
Q308-③ STOP (H-RATE)
0.46Vp-p, GRAY SCALE
B303-⑤ STOP
5.0Vp-p (V-RATE)
Q308-⑦ STOP (H-RATE)
0.34Vp-p, GRAY SCALE
Q310-⑤ STOP (H-RATE)
0.3Vp-p, COLOUR BAR
IC315-⑨ STOP
4.9Vp-p (H-RATE)
IC315-⑧ STOP
4.9Vp-p (H-RATE)
Q310
TL 520
IC 318
(1H DELAY)
(2H DELAY)
(0H DELAY)
Q310-② STOP (H-RATE)
0.3Vp-p, COLOUR BAR
B303-⑧ STOP (H-RATE)
0.7Vp-p, COLOUR BAR
IC314-⑬ STOP
4.0Vp-p (H-RATE)
IC314-㉛ STOP (H-RATE)
0.3Vp-p, COLOUR BAR
IC314-㉘ STOP (H-RATE)
0.3Vp-p, COLOUR BAR
TO AUTO FOCUS CIRCUIT
VD
TO VTR STAGE
VD
B8001
B302
16
TO CCD DRIVE CIRCUIT
VD
B201
B301
7
TO IC 314 - (65)
W-BLK
WHD
TO AUTO FOCUS CIRCUIT
BF
TO AUTO FOCUS CIRCUIT
DATA
TO AUTO FOCUS CIRCUIT
CLOCK
IC 304
LOAD
DATA
CLOCK
VDD
D/A
(D/A CONV.)
D/A
TO IC 314 - (24)
R-Y PEDESTAL
TO IC 314 - (28)
B-Y PEDESTAL
TO IC 314 - (36)
PEDESTAL ADJ.
TO IC 314 - (40)
1/2 FH ADJ.
TO IC 314 - (18)
B-Y MATRIX
TO IC 314 - (16)
B-Y GAIN
TO IC 314 - (14)
R-Y MATRIX
TO IC 314 - (10)
R-Y GAIN
TO IC 314 - (70)
WHITE BALANCE (RED)
TO IC 314 - (66)
WHITE BALANCE (BLUE)

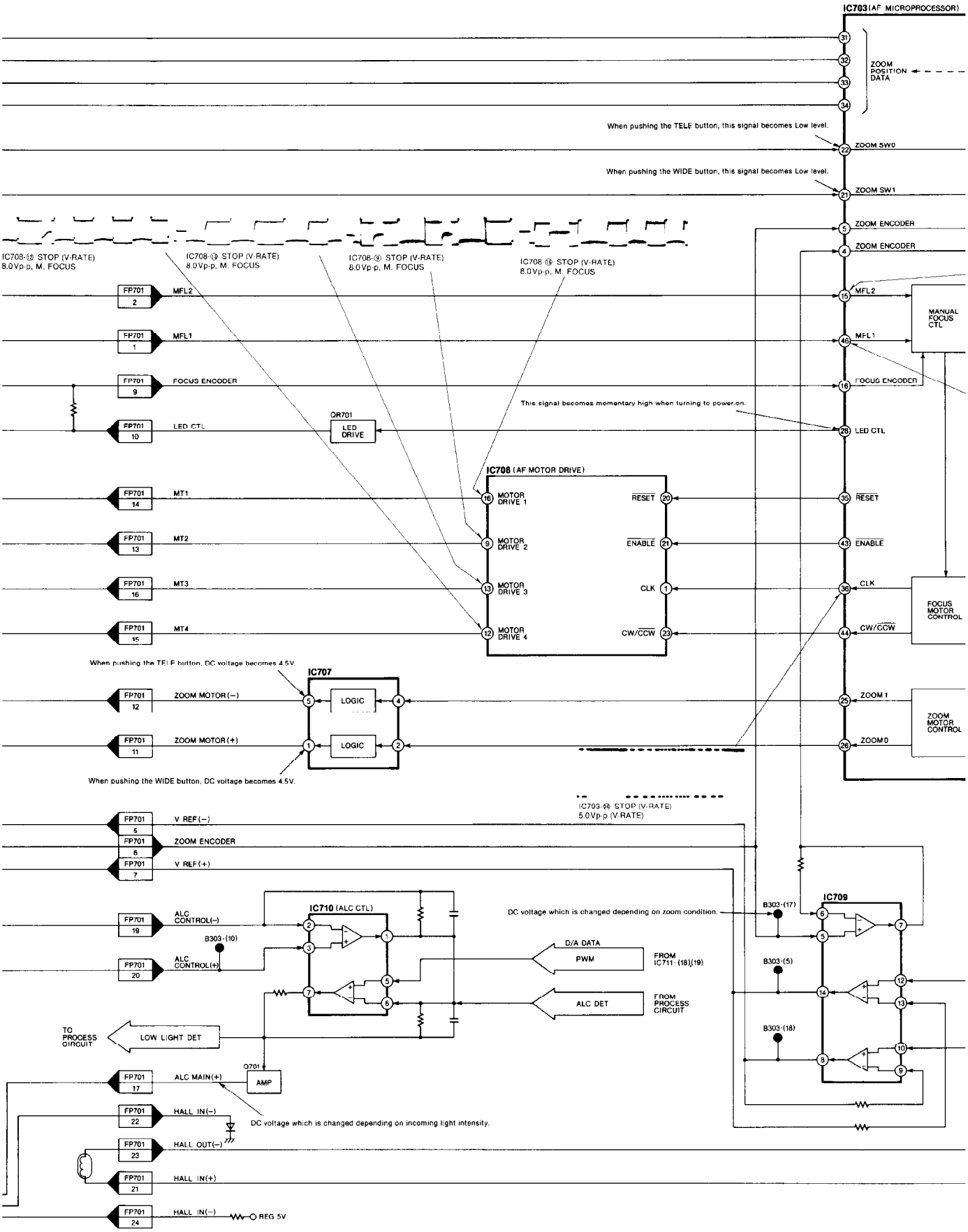

IC 315
TO AUTO FOCUS CIRCUIT
VD
TO VTR STAGE
B8001 B302 16
B303 · (3)
TO CCD DRIVE CIRCUIT
B201 B301 7
1 VD
TO IC 314 · (65)
W·BLK
9 W·BLK
WHD
19 WHD
TO AUTO FOCUS CIRCUIT
BF
21 BURST FLAG
CP2 28
B302 B8001 14
TO VTR STAGE
CBLK 29
CBLK
TO DIGITAL MEMORY CIRCUIT
SYNC 30
SYNC
TO IC 314 · (9)
SYNC
TO AUTO FOCUS CIRCUIT
IL520
CLK 41
B301 B201 8
FROM CCD DRIVE CIRCUIT
HD 45
B301 B201 6
TO CCD DRIVE CIRCUIT
HD
TO AUTO FOCUS CIRCUIT
IC315·㊾ 4.9Vp-p (I
IC315·㊷ STOP 4.9Vp-p (H-RATE)
DATA
CLOCK
IC 304
15 LOAD
17 DATA
16 CLOCK
+5V
VDD
10
11
R·Y PEDESTAL
B·Y PEDESTAL
PEDESTAL ADJ.
1/2 FH ADJ.
B·Y MATRIX
B·Y GAIN
R·Y MATRIX
R·Y GAIN
WHITE BALANCE (RED)
WHITE BALANCE (BLUE)
2
3
4
5
6
7
8
9
12
13
D/A
D/A
(D/A CONV.)
IC 305
16 CLOCK
17 DATA
15 LOAD
+5
VDD
10
11
RESET
B201 B301 4
CDS GAIN
B201 B301 5
TO CCD DRIVE CIRCUIT
AGC GAIN
PEDESTAL SET
CARRIER BALANCE
3
4
5
6
7
D/A
(D/A CONV.)

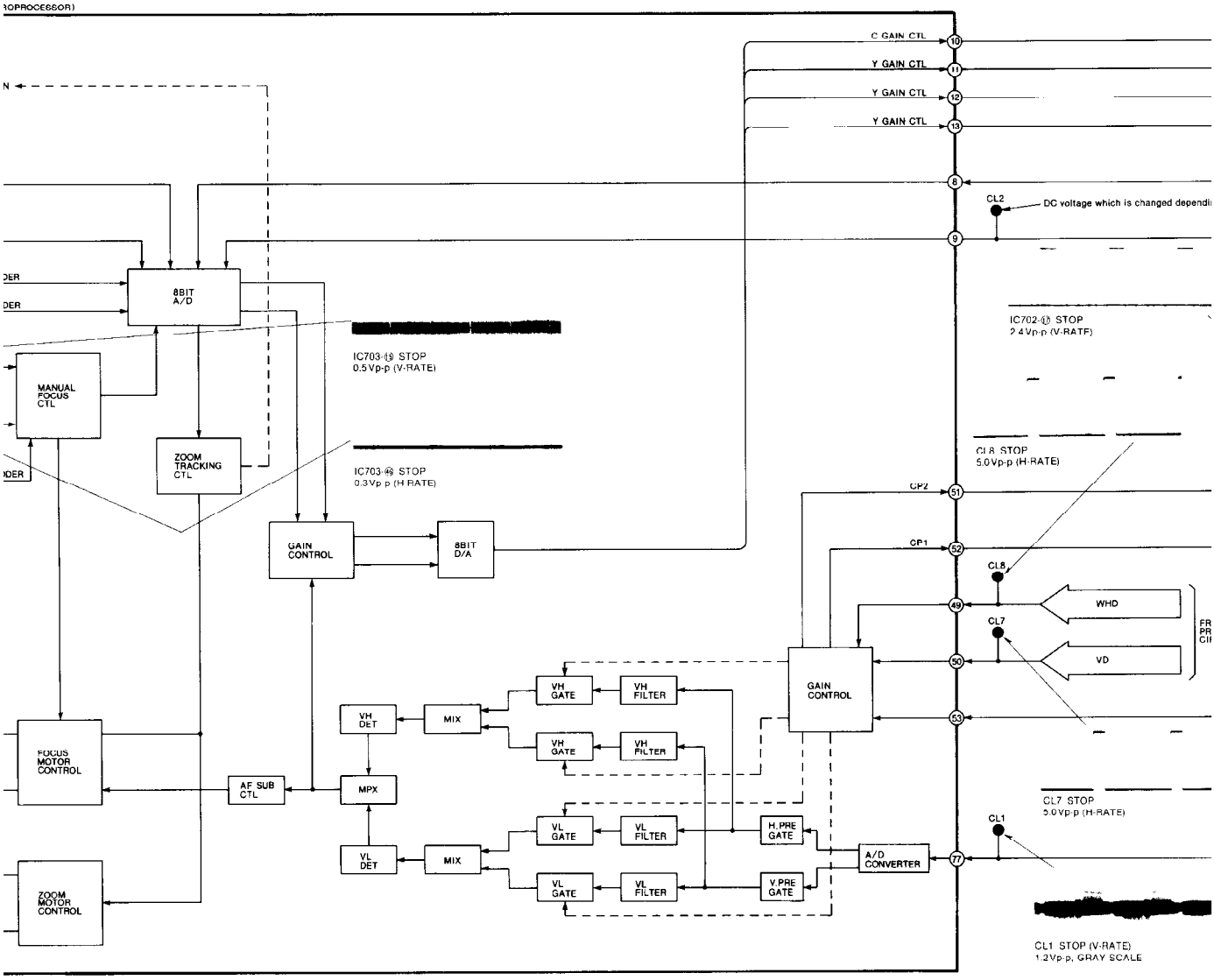

IC315-㉞ STOP
4.9Vp-p (H-RATE)
IC315-㉟ STOP
4.9Vp-p (H-RATE)
IC315-㊱ STOP
4.9Vp-p (H-RATE)
IC315-③ STOP
4.9Vp-p (H-RATE)
IC315-㉝ STOP
4.9Vp-p (H-RATE)
VMD1
B201 B301
11
VMD2
B201 B301
20
VMD3
B201 B301
10
TO CCD DRIVE CIRCUIT
IC303
VMD1
VMD2
VMD3
+5V
LOAD
DATA
CLOCK
LOAD
OSC
OSC
LOW LIGHT SIGNAL DET
VDD
SERIAL DATA
DATA IN
SERIAL CLOCK
LOAD
(EEP ROM)
B303-(2)
Q324
BUFFER
S. DATA
TO AUTO FOCUS CIRCUIT
B303-(1)
S. CLOCK
TO AUTO FOCUS CIRCUIT
LOAD
TO AUTO FOCUS CIRCUIT
X301
X'TAL OSC
+5V
LOW LIGHT DET
FROM AUTO FOCUS CIRCUIT
IC311
B303-(4)
OP2 OUT
FROM AUTO FOCUS CIRCUIT
VR301
GAIN
OP2 −
TO AUTO FOCUS CIRCUIT
+5V
VR302
AF OFFSET
H. OFFSET

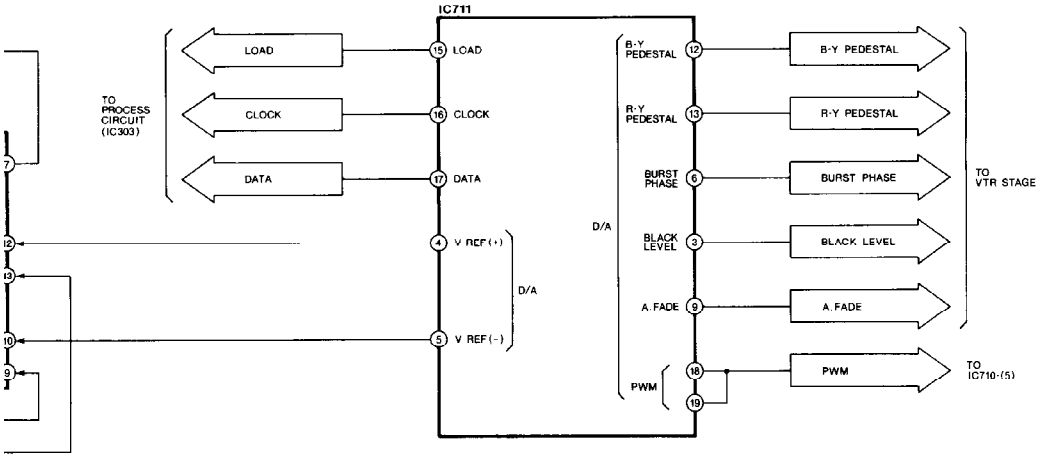
3-4. AUTO FOCUS BLOCK DIAGRAM

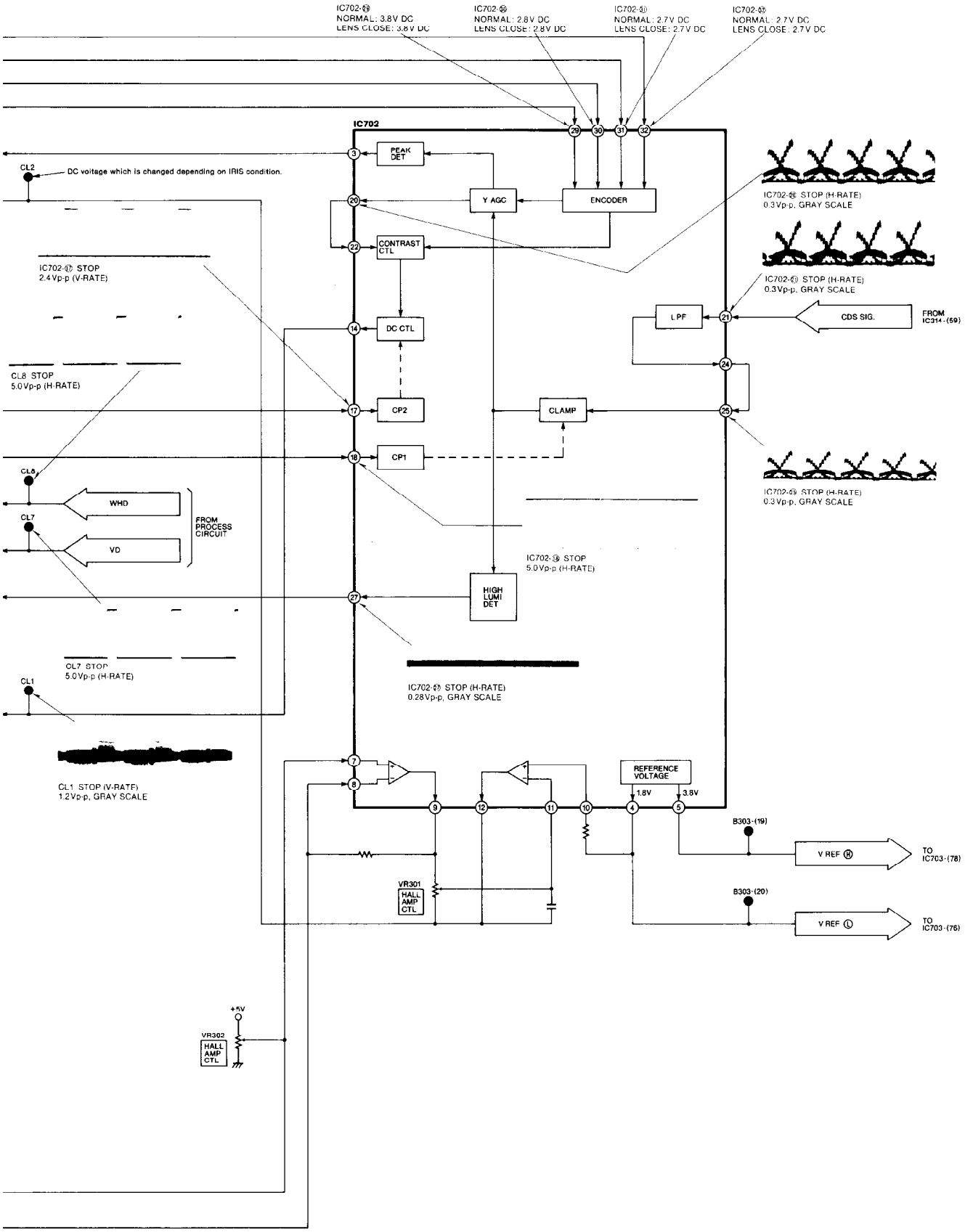



SI
SO
SERIAL CLOCK
VD
RESET
DIGI MEMO DATA
FROM DIGITAL MEMORY CIRCUIT
QR703
SERIAL CLOCK
FROM IC307-(9)
VD
FROM PROCESS CIRCUIT
RESET
FROM IC703-(28)
REG 5V
ZOOM ENCODER
FOCUS ENCODER
PHOTO COUPLER
PHOTO COUPLER
ZOOM LENS
IRIS
FOCUS LENS
ZOOM MOTOR
HALL SENSOR
IRIS MOTOR
FOCUS MOTOR
M
M

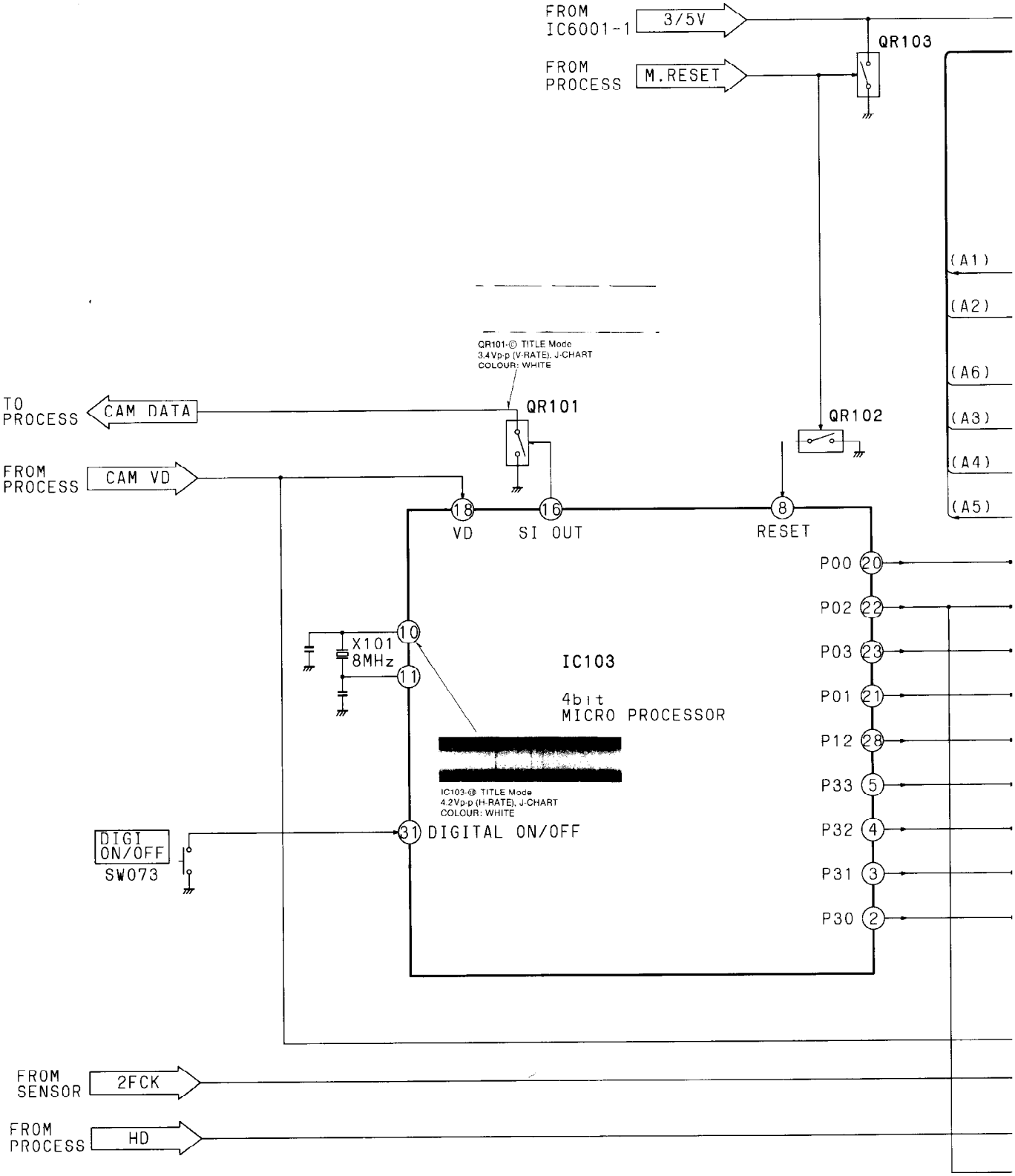

IC703 (AF MICROPROCESSOR)
ZOOM POSITION DATA
When pushing the TELE button, this signal becomes Low level.
ZOOM SW0
When pushing the WIDE button, this signal becomes Low level.
ZOOM SW1
ZOOM ENCODER
ZOOM ENCODER
IC708-⑫ STOP (V-RATE) 8.0Vp-p, M. FOCUS
IC708-⑬ STOP (V-RATE) 8.0Vp-p, M. FOCUS
IC708-⑭ STOP (V-RATE) 8.0Vp-p, M. FOCUS
IC708-⑮ STOP (V-RATE) 8.0Vp-p, M. FOCUS
FP701 2 MFL2
FP701 1 MFL1
FP701 9 FOCUS ENCODER
FP701 10 LED CTL
QR701 LED DRIVE
This signal becomes momentary high when turning to power-on.
MFL2
MFL1
FOCUS ENCODER
LED CTL
MANUAL FOCUS CTL
IC708 (AF MOTOR DRIVE)
FP701 14 MT1
FP701 13 MT2
FP701 16 MT3
FP701 15 MT4
MOTOR DRIVE 1
MOTOR DRIVE 2
MOTOR DRIVE 3
MOTOR DRIVE 4
RESET
ENABLE
CLK
CW/CCW
RESET
ENABLE
CLK
CW/CCW
FOCUS MOTOR CONTROL
When pushing the TELE button, DC voltage becomes 4.5V.
When pushing the WIDE button, DC voltage becomes 4.5V.
IC707
FP701 12 ZOOM MOTOR(−)
FP701 11 ZOOM MOTOR(+)
LOGIC
LOGIC
ZOOM 1
ZOOM 0
ZOOM MOTOR CONTROL
IC703-㊽ STOP (V-RATE) 5.0Vp-p (V-RATE)
FP701 5 V REF(−)
FP701 6 ZOOM ENCODER
FP701 7 V REF(+)
IC710 (ALC CTL)
FP701 19 ALC CONTROL(−)
FP701 20 ALC CONTROL(+)
B303-(10)
D/A DATA
PWM
FROM IC711-(18),(19)
ALC DET
FROM PROCESS CIRCUIT
DC voltage which is changed depending on zoom condition.
IC709
B303-(17)
B303-(5)
B303-(18)
TO PROCESS CIRCUIT
LOW LIGHT DET
Q701
AMP
FP701 17 ALC MAIN(+)
FP701 22 HALL IN(−)
FP701 23 HALL OUT(−)
FP701 21 HALL IN(+)
FP701 24 HALL IN(−)
REG 5V
DC voltage which is changed depending on incoming light intensity.

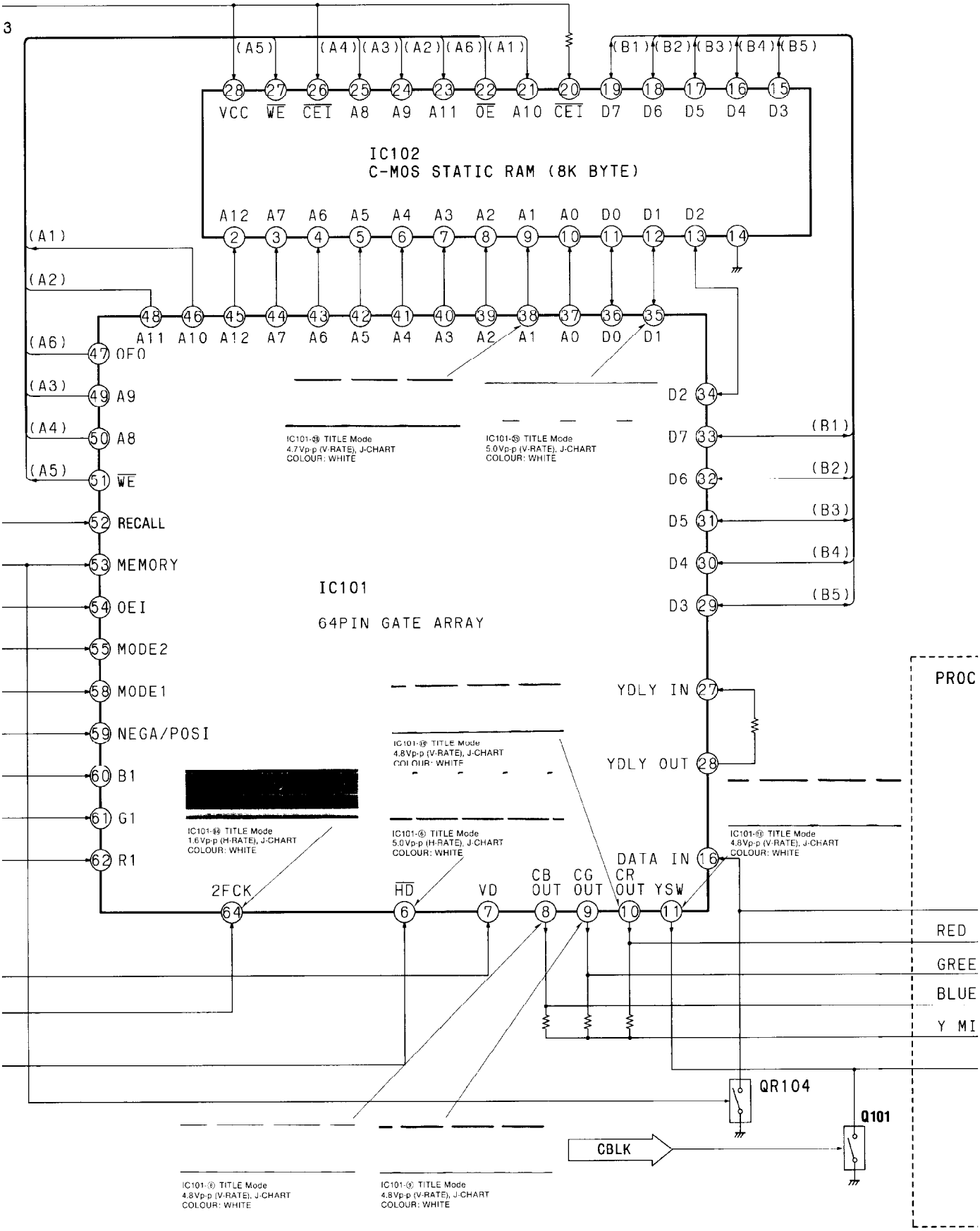

C GAIN CTL
Y GAIN CTL
Y GAIN CTL
Y GAIN CTL
CL2
DC voltage which is changed dependi
8BIT A/D
IC703-⑮ STOP
0.5Vp-p (V-RATE)
IC702-⑰ STOP
2.4Vp-p (V-RATE)
MANUAL FOCUS CTL
ZOOM TRACKING CTL
IC703-㊽ STOP
0.3Vp-p (H-RATE)
CLR STOP
5.0Vp-p (H-RATE)
GAIN CONTROL
8BIT D/A
CP2
CP1
CL5
WHD
CL7
VD
VH GATE
VH FILTER
VH DET
MIX
GAIN CONTROL
FOCUS MOTOR CONTROL
AF SUB CTL
MPX
VL GATE
VL FILTER
H.PRE GATE
VL DET
MIX
A/D CONVERTER
CL1
V.PRE GATE
CL7 STOP
5.0Vp-p (H-RATE)
ZOOM MOTOR CONTROL
CL1 STOP (V-RATE)
1.2Vp-p, GRAY SCALE

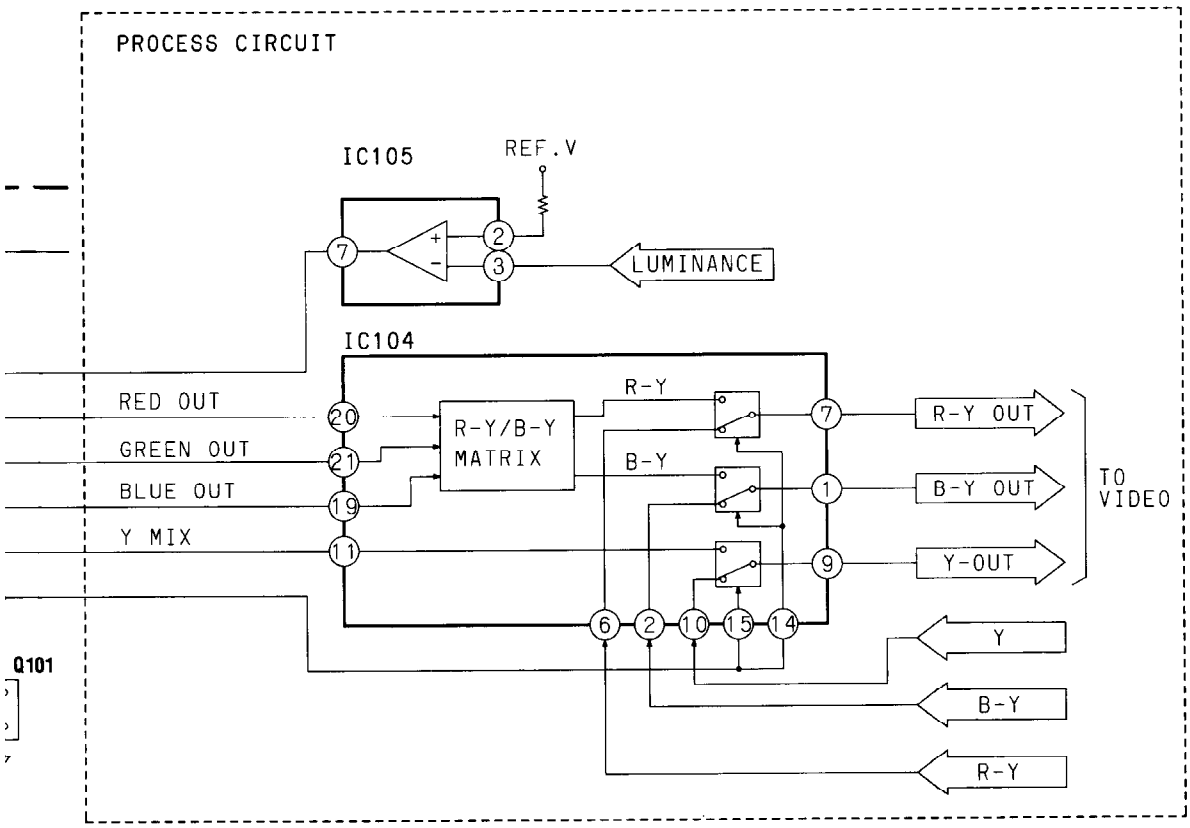

IC711
TO PROCESS CIRCUIT (IC303)
LOAD
CLOCK
DATA
V REF(+)
V REF(-)
D/A
B-Y PEDESTAL
R-Y PEDESTAL
BURST PHASE
BLACK LEVEL
A.FADE
PWM
TO VTR STAGE
TO IC710-(5)


IC702-㉙ NORMAL: 3.8V DC LENS CLOSE: 3.8V DC
IC702-㉚ NORMAL: 2.8V DC LENS CLOSE: 2.8V DC
IC702-㉛ NORMAL: 2.7V DC LENS CLOSE: 2.7V DC
IC702-㉜ NORMAL: 2.7V DC LENS CLOSE: 2.7V DC
IC702
PEAK DET
Y AGC
ENCODER
CONTRAST CTL
DC CTL
CP2
CP1
CLAMP
LPF
CDS SIG.
FROM IC314-(59)
HIGH LUMI DET
REFERENCE VOLTAGE
1.8V
3.8V
CL2
DC voltage which is changed depending on IRIS condition.
IC702-㉑ STOP 2.4Vp-p (V-RATE)
CL8 STOP 5.0Vp-p (H-RATE)
CL8
CL7
WHD
VD
FROM PROCESS CIRCUIT
CL7 STOP 5.0Vp-p (H-RATE)
CL1
CL1 STOP (V-RATE) 1.2Vp-p, GRAY SCALE
IC702-㉖ STOP 5.0Vp-p (H-RATE)
IC702-㉗ STOP (H-RATE) 0.28Vp-p, GRAY SCALE
IC702-㉘ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
IC702-㉒ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
IC702-㉔ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
B303-(19)
V REF Ⓡ
TO IC703-(78)
B303-(20)
V REF Ⓛ
TO IC703-(76)
VR301 HALL AMP CTL
VR302 HALL AMP CTL
+5V

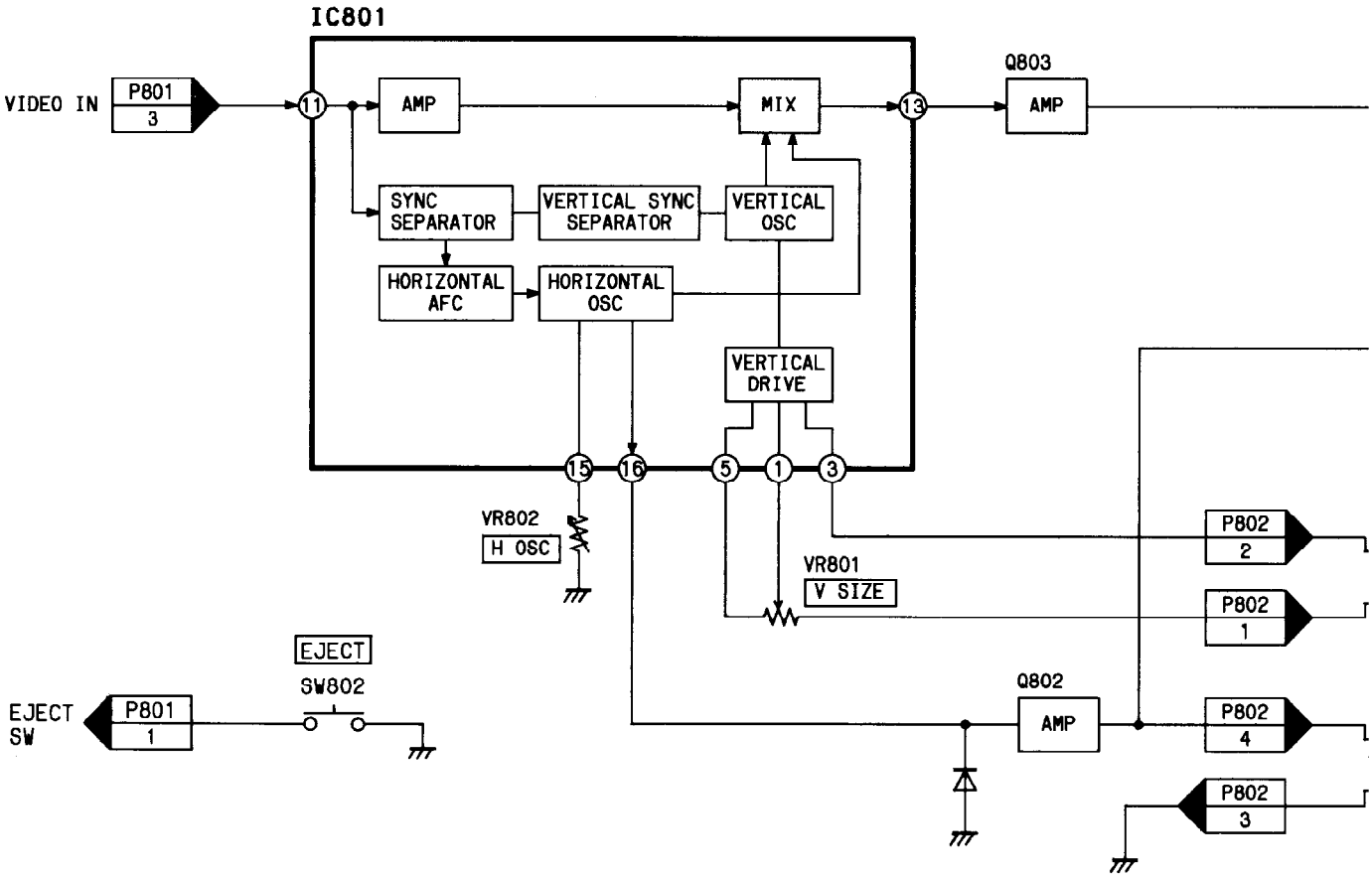
3-5. DIGITAL MEMORY BLOCK DIAGRAM

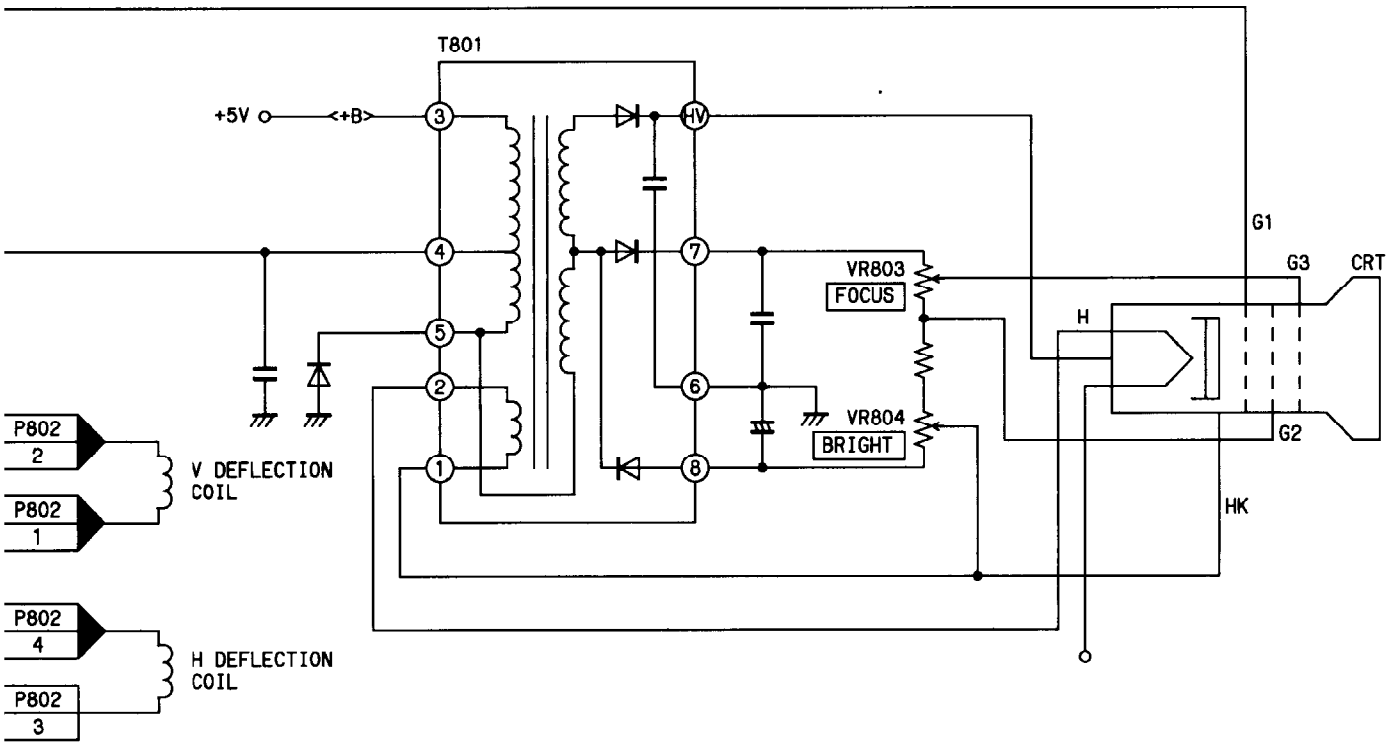



IC102
C-MOS STATIC RAM (8K BYTE)
VCC WE CE1 A8 A9 A11 OE A10 CE1 D7 D6 D5 D4 D3
A12 A7 A6 A5 A4 A3 A2 A1 A0 D0 D1 D2
IC101
64PIN GATE ARRAY
OF0
A9
A8
WE
RECALL
MEMORY
OEI
MODE2
MODE1
NEGA/POSI
B1
G1
R1
2FCK
HD
VD
CB OUT
CG OUT
CR OUT
YSW
DATA IN
YDLY IN
YDLY OUT
PROC
RED
GREE
BLUE
Y MI
QR104
Q101
CBLK
IC101-⑱ TITLE Mode
4.7Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-㊴ TITLE Mode
5.0Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑰ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-㊸ TITLE Mode
1.6Vp-p (H-RATE), J-CHART
COLOUR: WHITE
IC101-⑥ TITLE Mode
5.0Vp-p (H-RATE), J-CHART
COLOUR: WHITE
IC101-⑪ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑧ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑨ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE

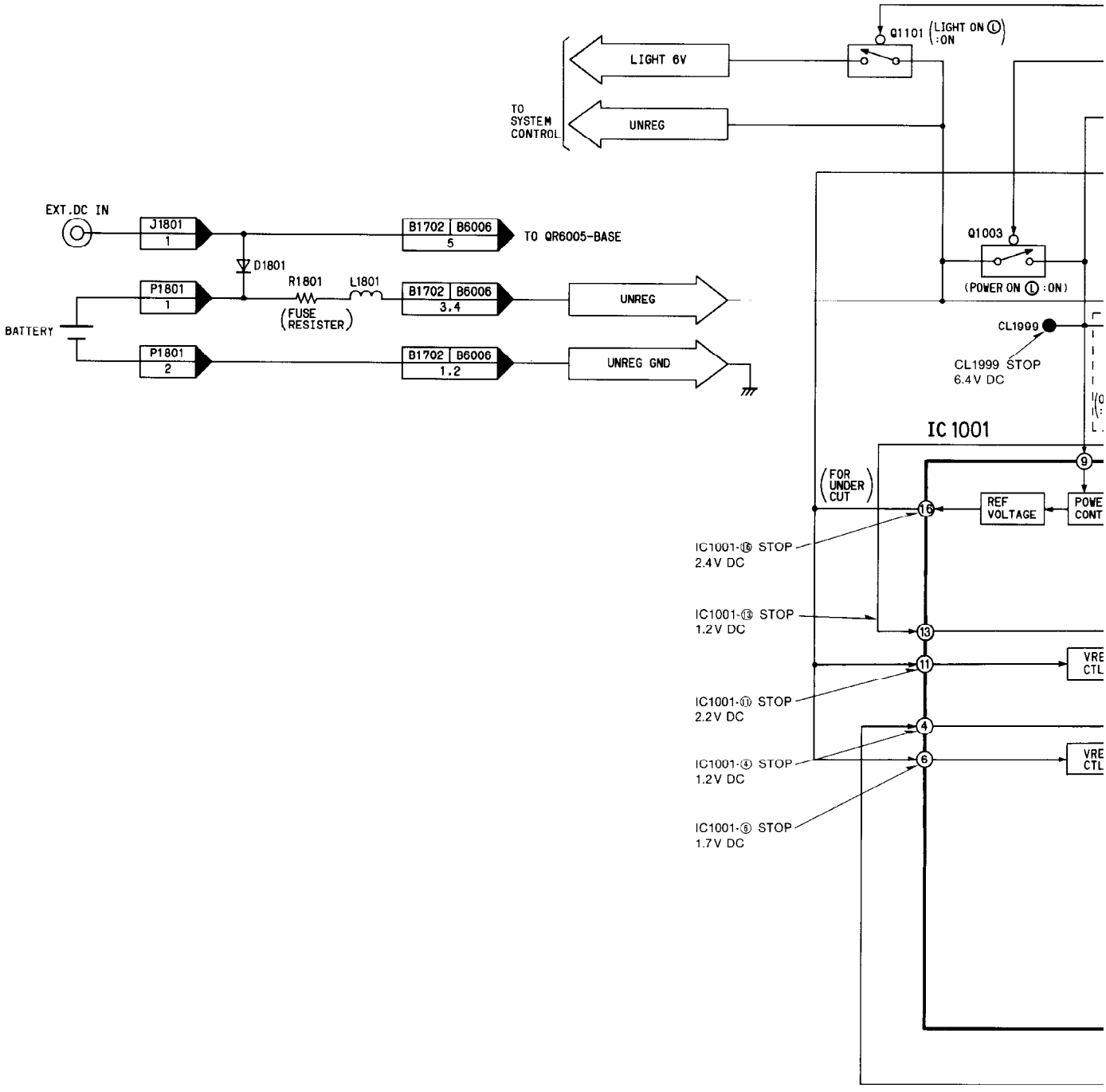

PROCESS CIRCUIT
IC105
REF.V
LUMINANCE
IC104
RED OUT
GREEN OUT
BLUE OUT
Y MIX
R-Y/B-Y
MATRIX
R-Y
B-Y
R-Y OUT
B-Y OUT
Y-OUT
TO
VIDEO
Y
B-Y
R-Y
Q101

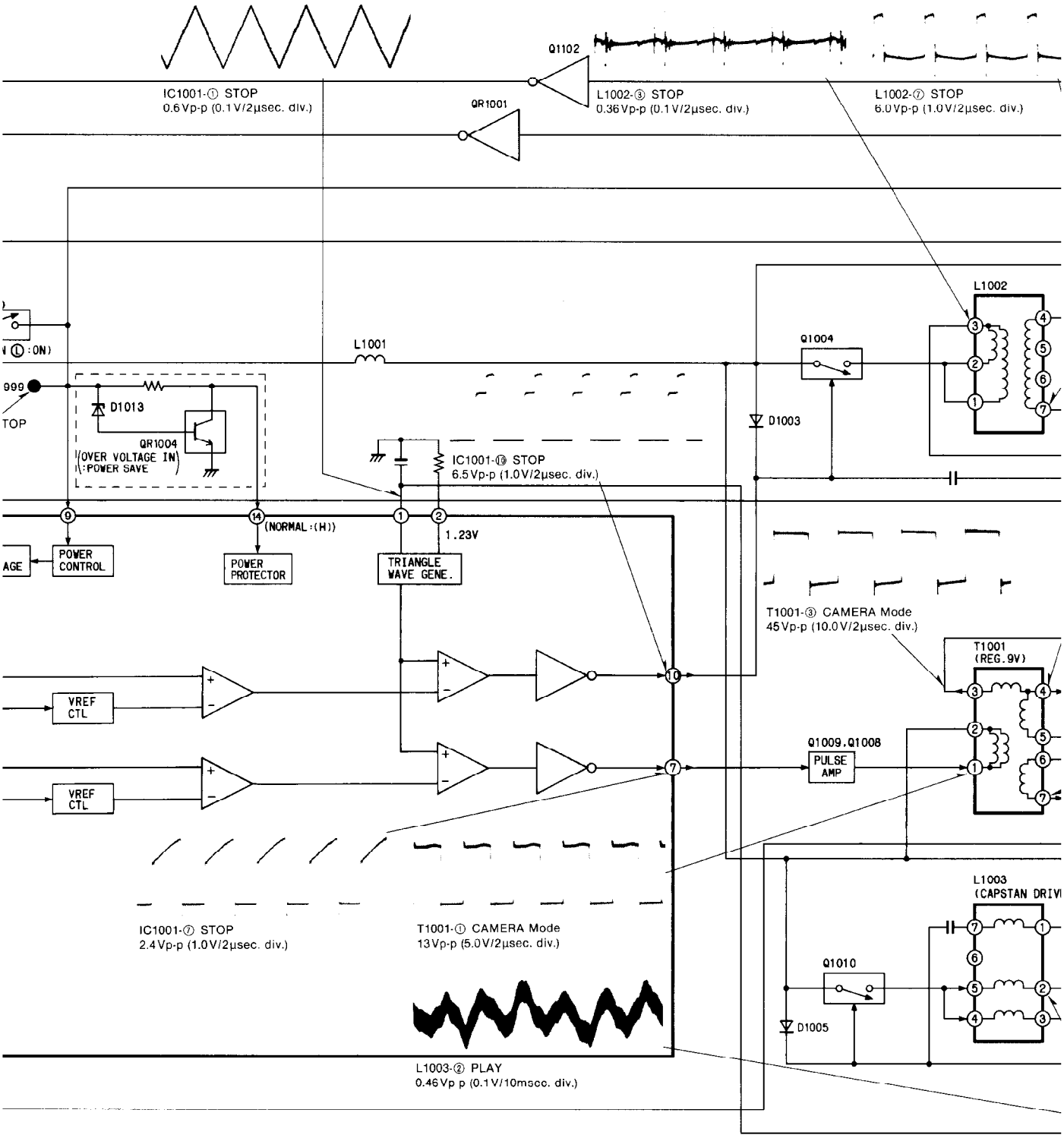
3-6. E.V.F. BLOCK DIAGRAM

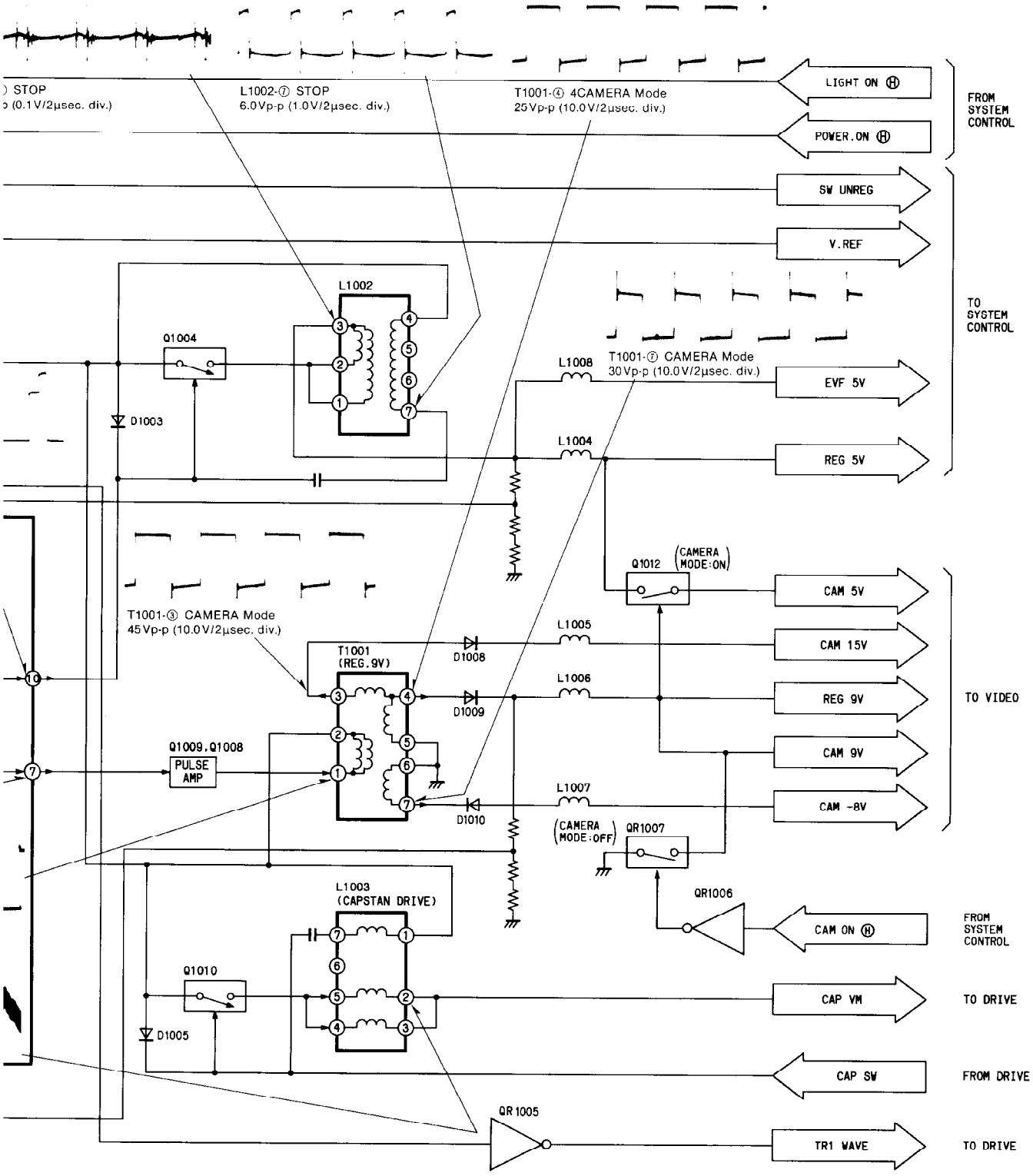



T801
+5V
<+B>
3
HV
4
7
5
2
6
1
8
VR803
FOCUS
VR804
BRIGHT
G1
G3
CRT
H
G2
HK
P802
2
P802
1
V DEFLECTION
COIL
P802
4
P802
3
H DEFLECTION
COIL

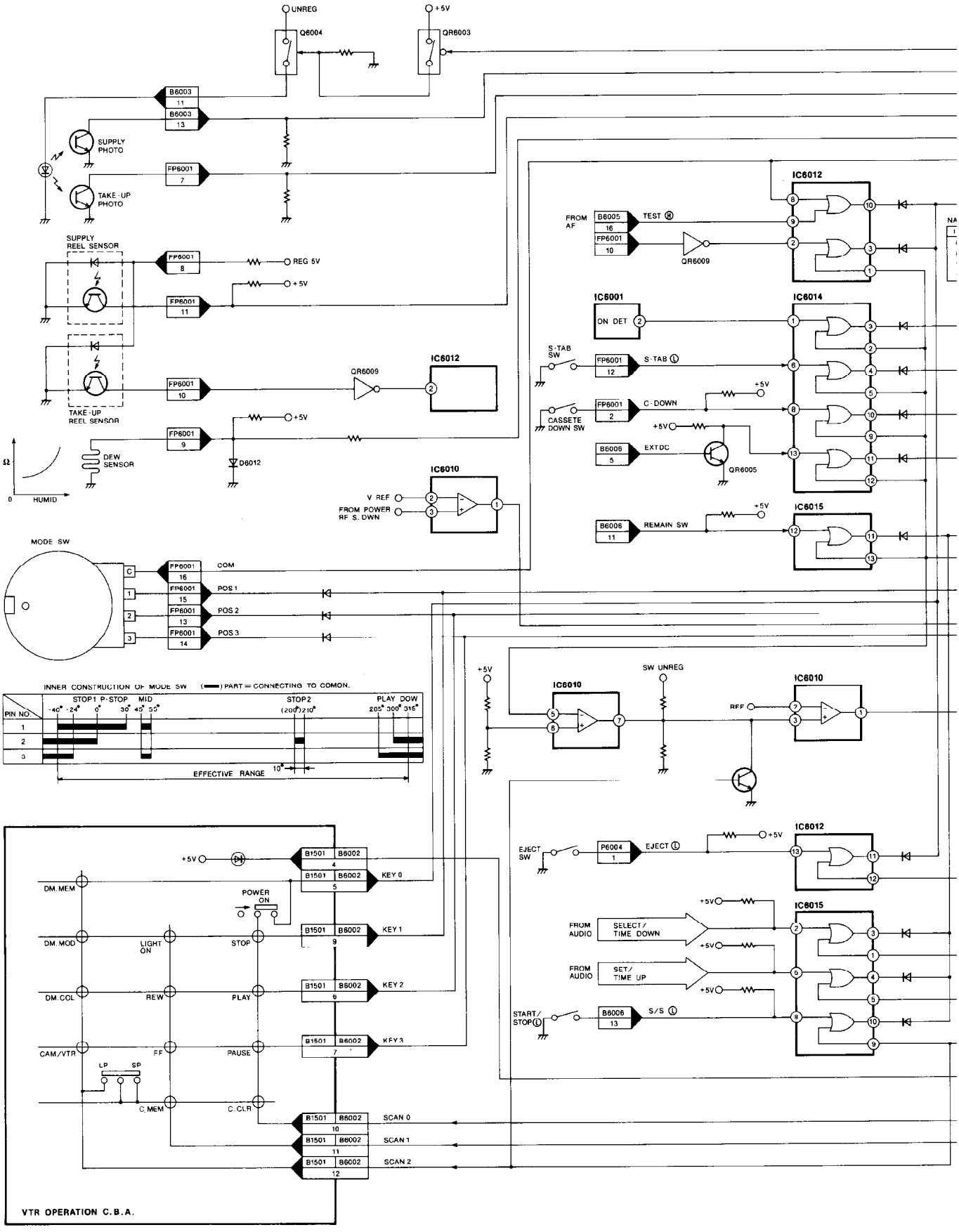
3-7. POWER BLOCK DIAGRAM

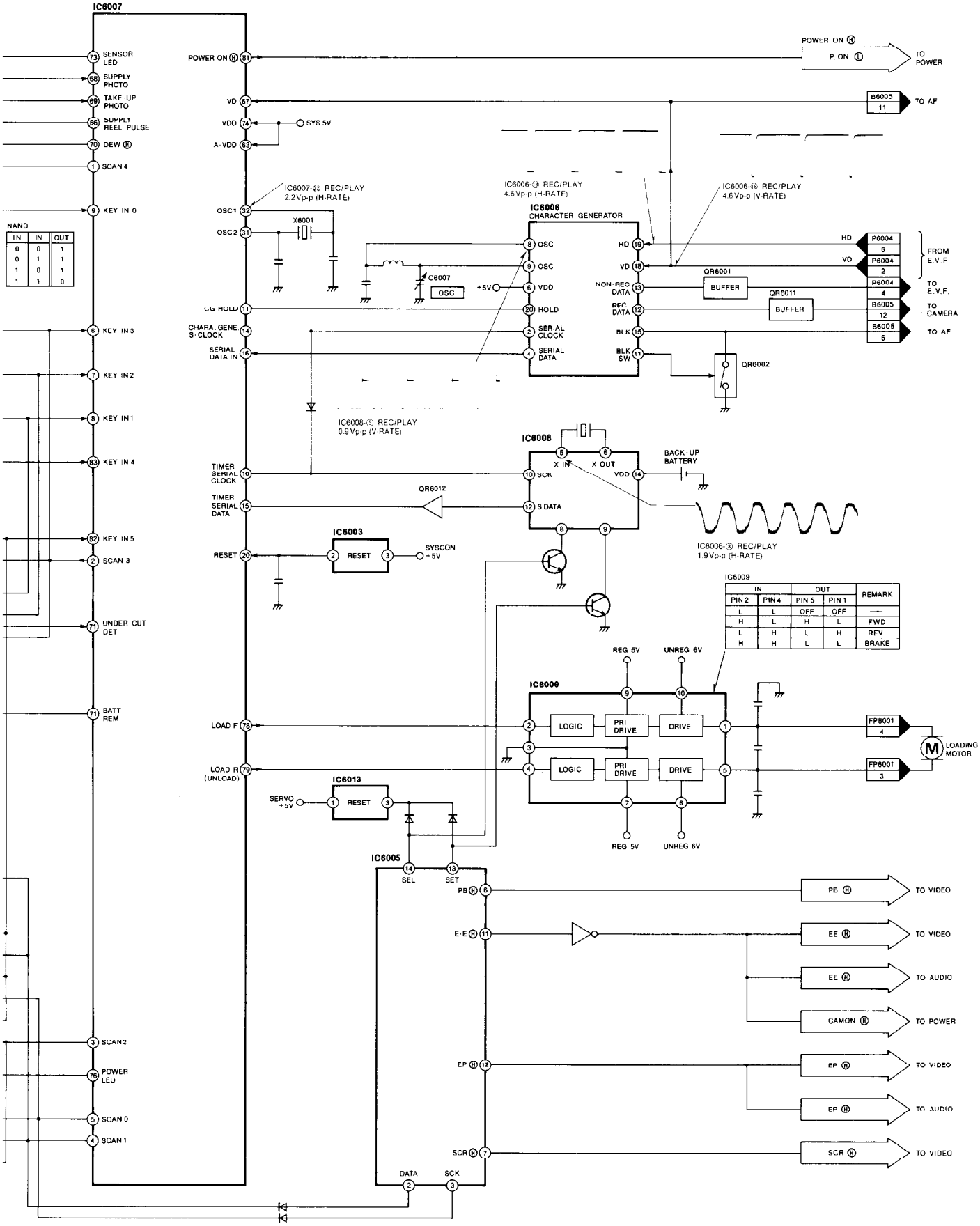



IC1001-① STOP
0.6Vp-p (0.1V/2μsec. div.)
Q1102
QR1001
L1002-③ STOP
0.36Vp-p (0.1V/2μsec. div.)
L1002-⑦ STOP
6.0Vp-p (1.0V/2μsec. div.)
L1002
L1001
Q1004
D1003
D1013
QR1004
(OVER VOLTAGE IN
:POWER SAVE
IC1001-⑩ STOP
6.5Vp-p (1.0V/2μsec. div.)
(NORMAL:(H))
1.23V
POWER CONTROL
POWER PROTECTOR
TRIANGLE WAVE GENE.
T1001-③ CAMERA Mode
45Vp-p (10.0V/2μsec. div.)
T1001
(REG.9V)
VREF CTL
VREF CTL
Q1009,Q1008
PULSE AMP
L1003
(CAPSTAN DRIV
IC1001-⑦ STOP
2.4Vp-p (1.0V/2μsec. div.)
T1001-① CAMERA Mode
13Vp-p (5.0V/2μsec. div.)
Q1010
D1005
L1003-② PLAY
0.46Vp-p (0.1V/10msec. div.)

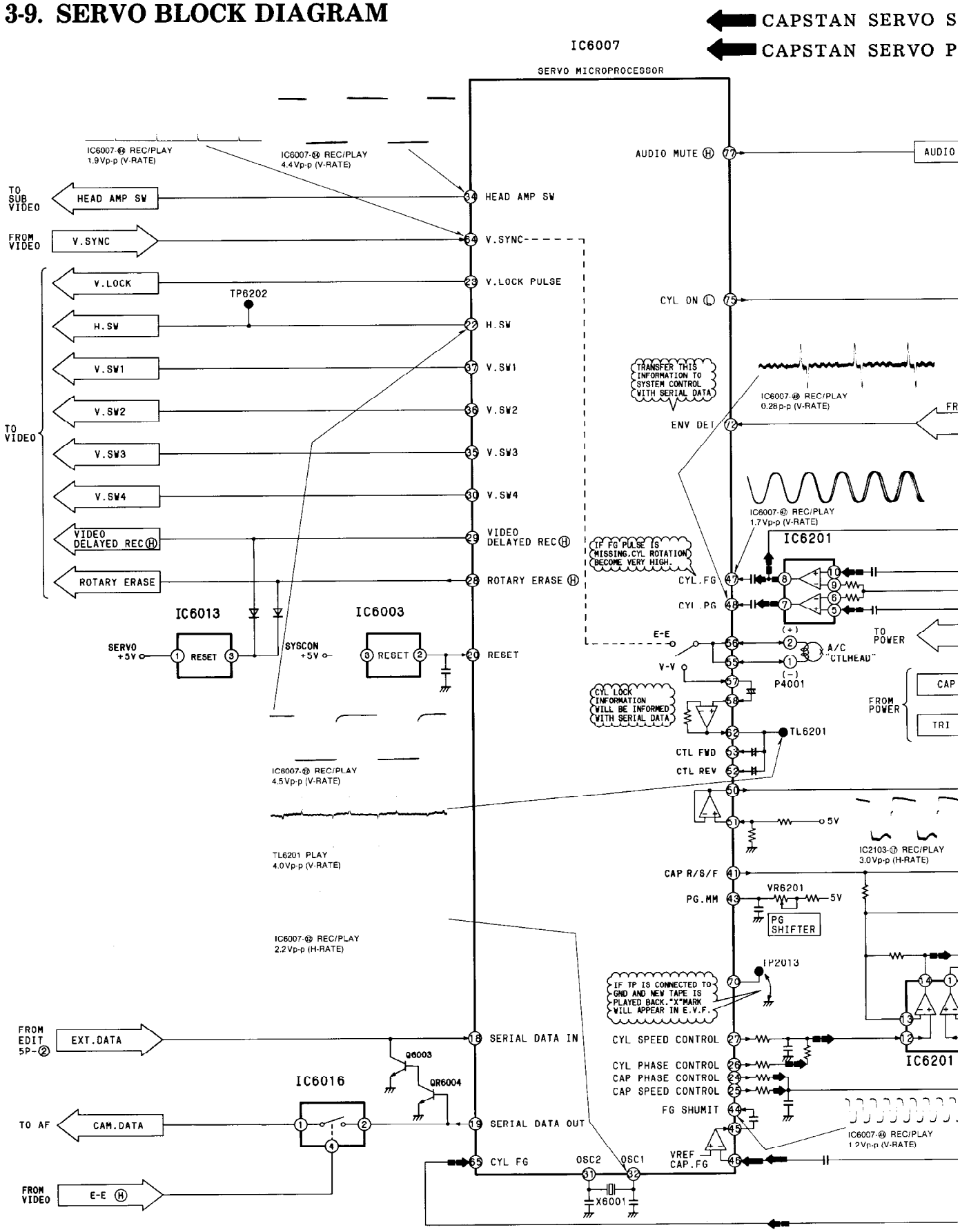

) STOP
(0.1V/2μsec. div.)
L1002-⑦ STOP
6.0Vp-p (1.0V/2μsec. div.)
T1001-④ 4CAMERA Mode
25Vp-p (10.0V/2μsec. div.)
LIGHT ON Ⓗ
POWER.ON Ⓗ
FROM SYSTEM CONTROL
SW UNREG
V.REF
TO SYSTEM CONTROL
L1002
Q1004
D1003
T1001-⑦ CAMERA Mode
30Vp-p (10.0V/2μsec. div.)
L1008
EVF 5V
L1004
REG 5V
Q1012
(CAMERA MODE:ON)
CAM 5V
T1001-③ CAMERA Mode
45Vp-p (10.0V/2μsec. div.)
T1001 (REG.9V)
D1008
L1005
CAM 15V
D1009
L1006
REG 9V
TO VIDEO
Q1009,Q1008
PULSE AMP
CAM 9V
D1010
L1007
CAM -8V
(CAMERA MODE:OFF)
QR1007
L1003 (CAPSTAN DRIVE)
QR1006
CAM ON Ⓗ
FROM SYSTEM CONTROL
Q1010
CAP VM
TO DRIVE
D1005
CAP SW
FROM DRIVE
QR1005
TR1 WAVE
TO DRIVE

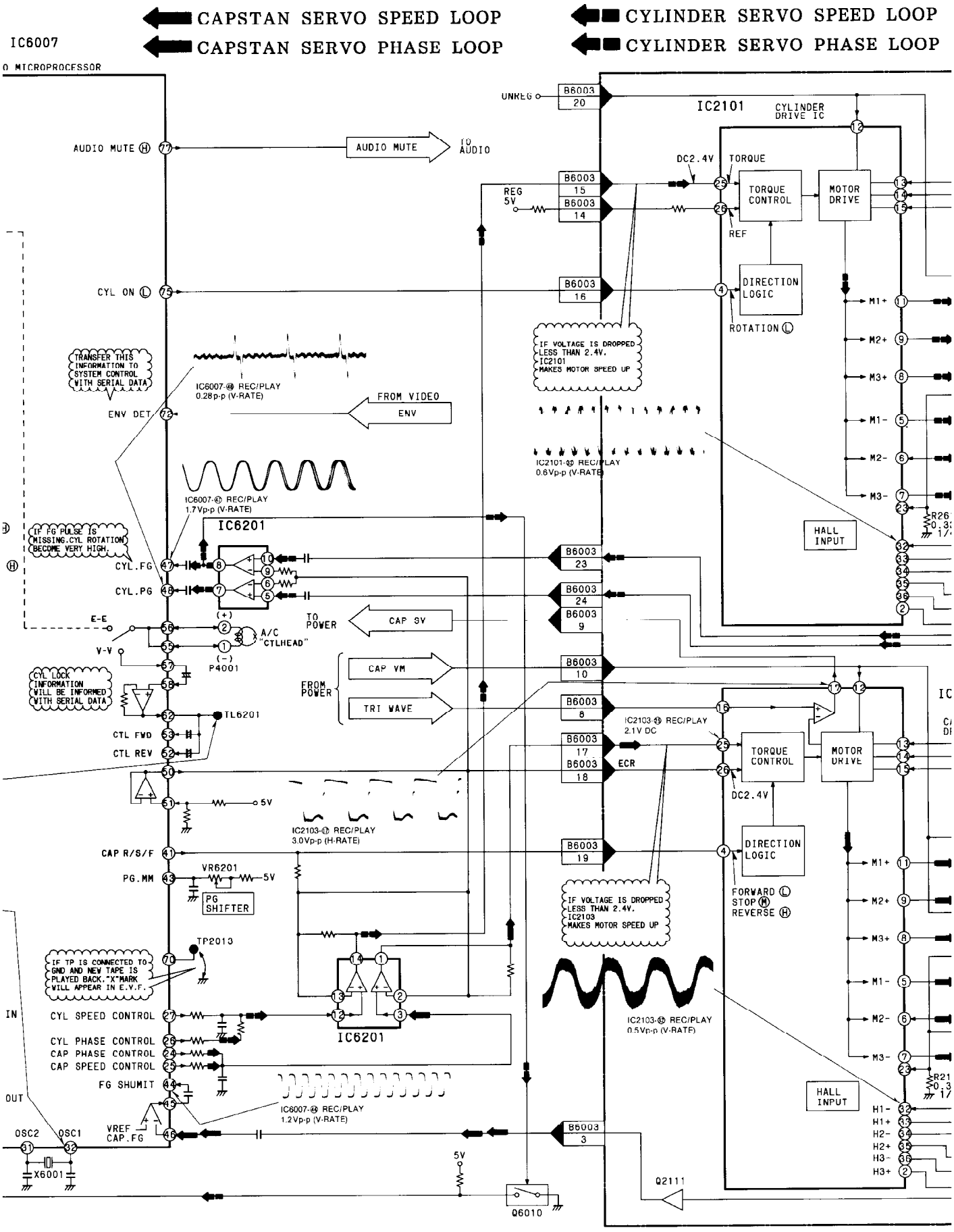
3-8. SYSTEM CONTROL BLOCK DIAGRAM




IC6007
SENSOR LED
SUPPLY PHOTO
TAKE-UP PHOTO
SUPPLY REEL PULSE
DEW
SCAN 4
KEY IN 0
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 4
KEY IN 5
SCAN 3
UNDER CUT DET
BATT REM
SCAN 2
POWER LED
SCAN 0
SCAN 1
NAND
IN IN OUT
0 0 1
0 1 1
1 0 1
1 1 0
POWER ON
VD
VDD
A-VDD
SYS 5V
OSC1
OSC2
X6001
C6007
OSC
+5V
CG HOLD
CHARA. GENE. S-CLOCK
SERIAL DATA IN
IC6007-㉜ REC/PLAY 2.2Vp-p (H-RATE)
IC6006-⑱ REC/PLAY 4.6Vp-p (H-RATE)
IC6006-⑲ REC/PLAY 4.6Vp-p (V-RATE)
IC6006
CHARACTER GENERATOR
OSC
VDD
HOLD
SERIAL CLOCK
SERIAL DATA
HD
VD
NON-REC DATA
REC. DATA
BLK
BLK SW
QR6001
BUFFER
QR6011
BUFFER
QR6002
P.ON
TO POWER
B6005 11
TO AF
P6004 5
P6004 2
P6004 4
B6005 12
B6005 6
FROM E.V.F
TO E.V.F.
TO CAMERA
TO AF
IC6008-③ REC/PLAY 0.9Vp-p (V-RATE)
IC6008
X IN
X OUT
VDD
BACK-UP BATTERY
TIMER SERIAL CLOCK
TIMER SERIAL DATA
SCK
S DATA
QR6012
IC6008-⑤ REC/PLAY 1.9Vp-p (H-RATE)
IC6003
RESET
SYSCON +5V
IC6009
IN OUT REMARK
PIN 2 PIN 4 PIN 5 PIN 1
L L OFF OFF
H L H L FWD
L H L H REV
H H L L BRAKE
REG 5V
UNREG 6V
IC6009
LOGIC
PRI DRIVE
DRIVE
LOAD F
LOAD R (UNLOAD)
FP6001 4
FP6001 3
LOADING MOTOR
IC6013
SERVO +5V
RESET
IC6005
SEL
SET
DATA
SCK
PB
E-E
EP
SCR
TO VIDEO
TO VIDEO
TO AUDIO
TO POWER
TO VIDEO
TO AUDIO
TO VIDEO

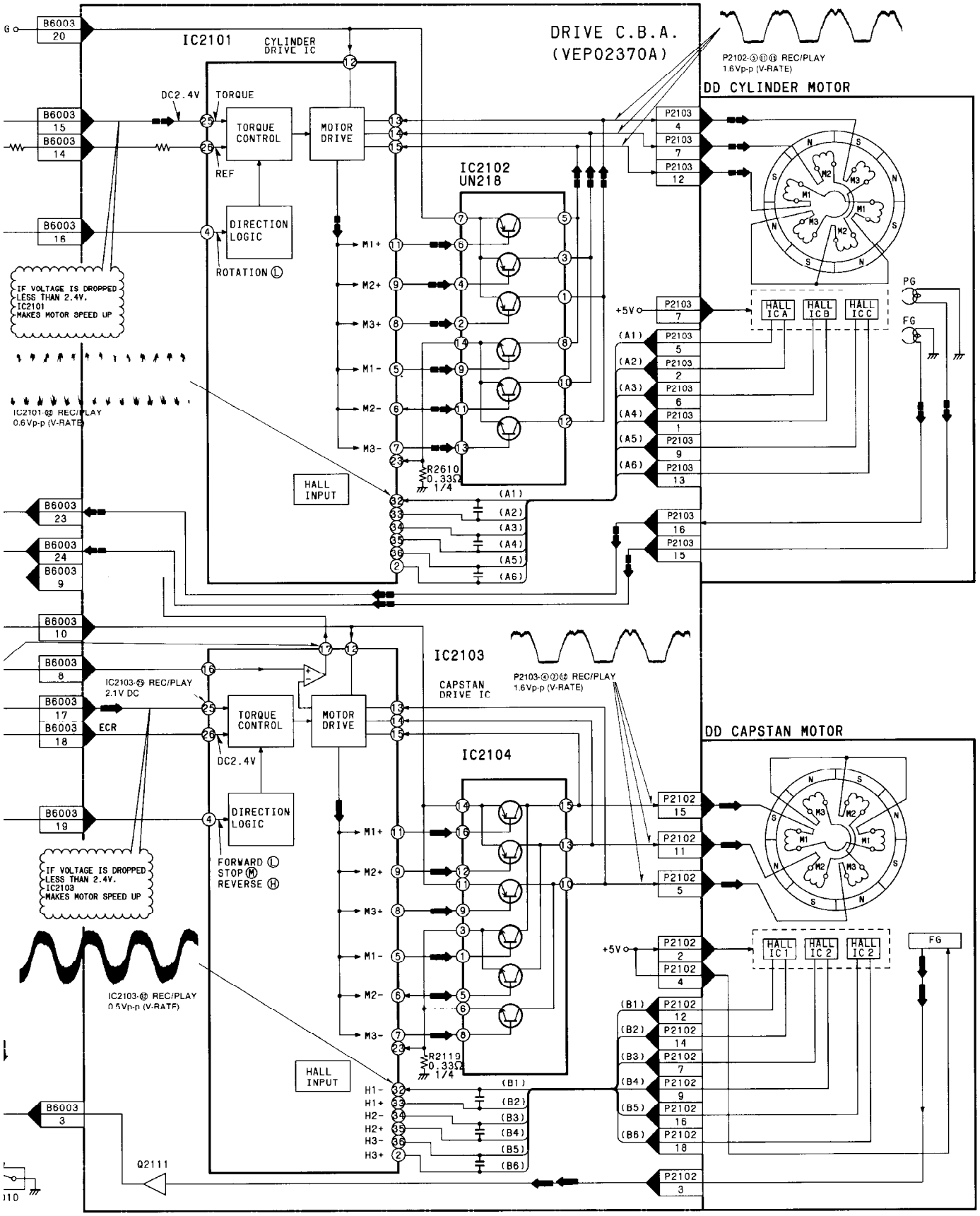
3-9. SERVO BLOCK DIAGRAM



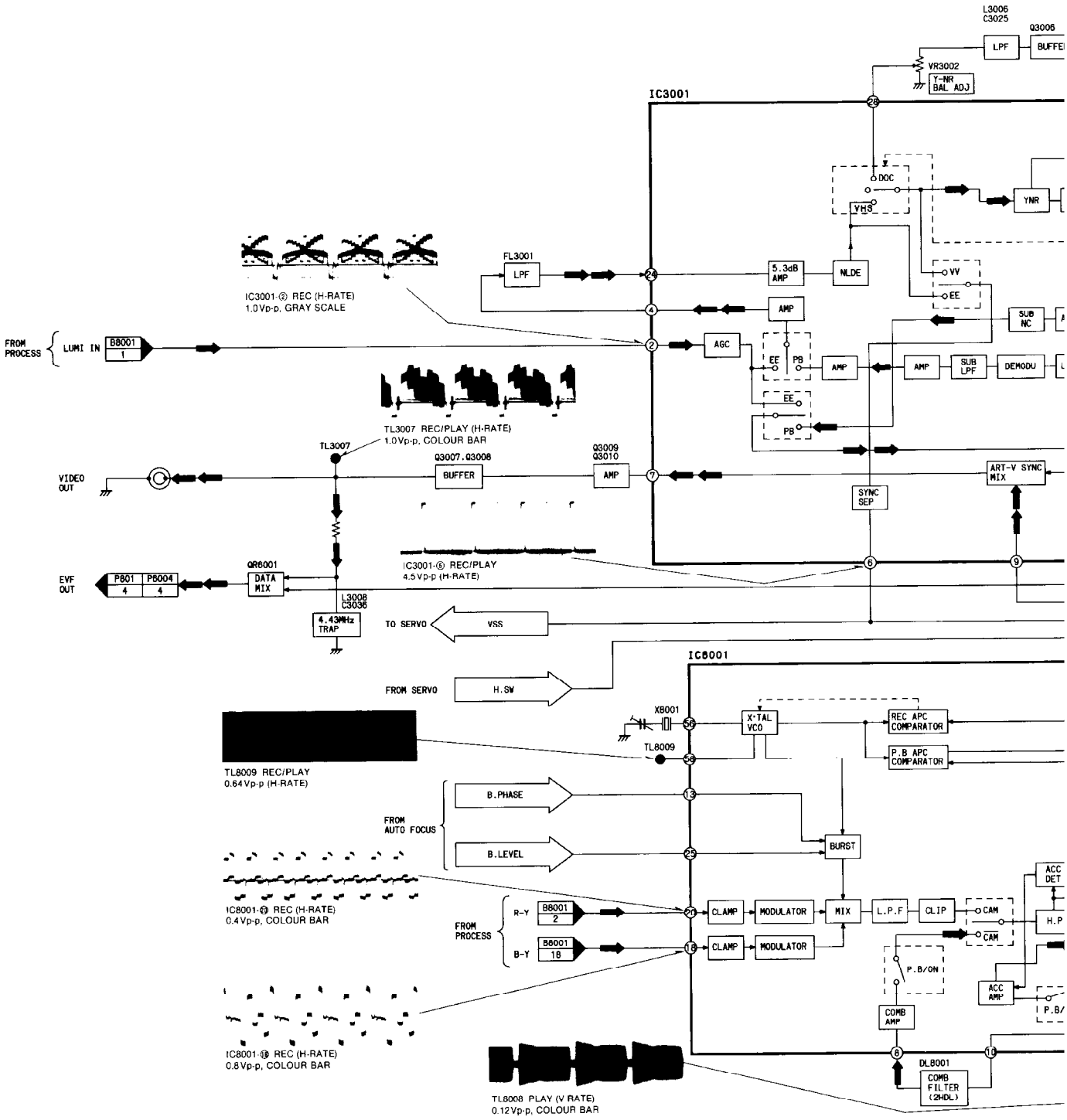

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
IC6007
O MICROPROCESSOR
IC2101
CYLINDER DRIVE IC
IC6201
AUDIO MUTE
TO AUDIO
UNREG
B6003 20
DC2.4V
TORQUE
TORQUE CONTROL
MOTOR DRIVE
REG 5V
B6003 15
B6003 14
REF
DIRECTION LOGIC
ROTATION
CYL ON
B6003 16
IF VOLTAGE IS DROPPED LESS THAN 2.4V, IC2101 MAKES MOTOR SPEED UP
TRANSFER THIS INFORMATION TO SYSTEM CONTROL WITH SERIAL DATA
IC6007-48 REC/PLAY 0.28p-p (V-RATE)
ENV DET
FROM VIDEO ENV
IC2101-22 REC/PLAY 0.6Vp-p (V-RATE)
IC6007-47 REC/PLAY 1.7Vp-p (V-RATE)
M1+
M2+
M3+
M1-
M2-
M3-
HALL INPUT
IF FG PULSE IS MISSING,CYL ROTATION BECOME VERY HIGH.
CYL.FG
CYL.PG
B6003 23
B6003 24
B6003 9
E-E
V-V
A/C "CTLHEAD"
P4001
TO POWER
CAP SV
CAP VM
TRI WAVE
FROM POWER
CYL LOCK INFORMATION WILL BE INFORMED WITH SERIAL DATA
TL6201
CTL FWD
CTL REV
B6003 10
B6003 8
B6003 17
B6003 18
ECR
IC2103-13 REC/PLAY 2.1V DC
IC2103-13 REC/PLAY 3.0Vp-p (H-RATE)
5V
CAP R/S/F
PG.MM
VR6201
PG SHIFTER
B6003 19
FORWARD L
STOP M
REVERSE H
TP2013
IF TP IS CONNECTED TO GND AND NEW TAPE IS PLAYED BACK,"X"MARK WILL APPEAR IN E.V.F.
IN
CYL SPEED CONTROL
CYL PHASE CONTROL
CAP PHASE CONTROL
CAP SPEED CONTROL
FG SHUMIT
OUT
IC2103-12 REC/PLAY 0.5Vp-p (V-RATE)
IC6007-46 REC/PLAY 1.2Vp-p (V-RATE)
OSC2
OSC1
VREF
CAP.FG
X6001
B6003 3
Q6010
Q2111
H1-
H1+
H2-
H2+
H3-
H3+

CYLINDER SERVO SPEED LOOP

CYLINDER SERVO PHASE LOOP

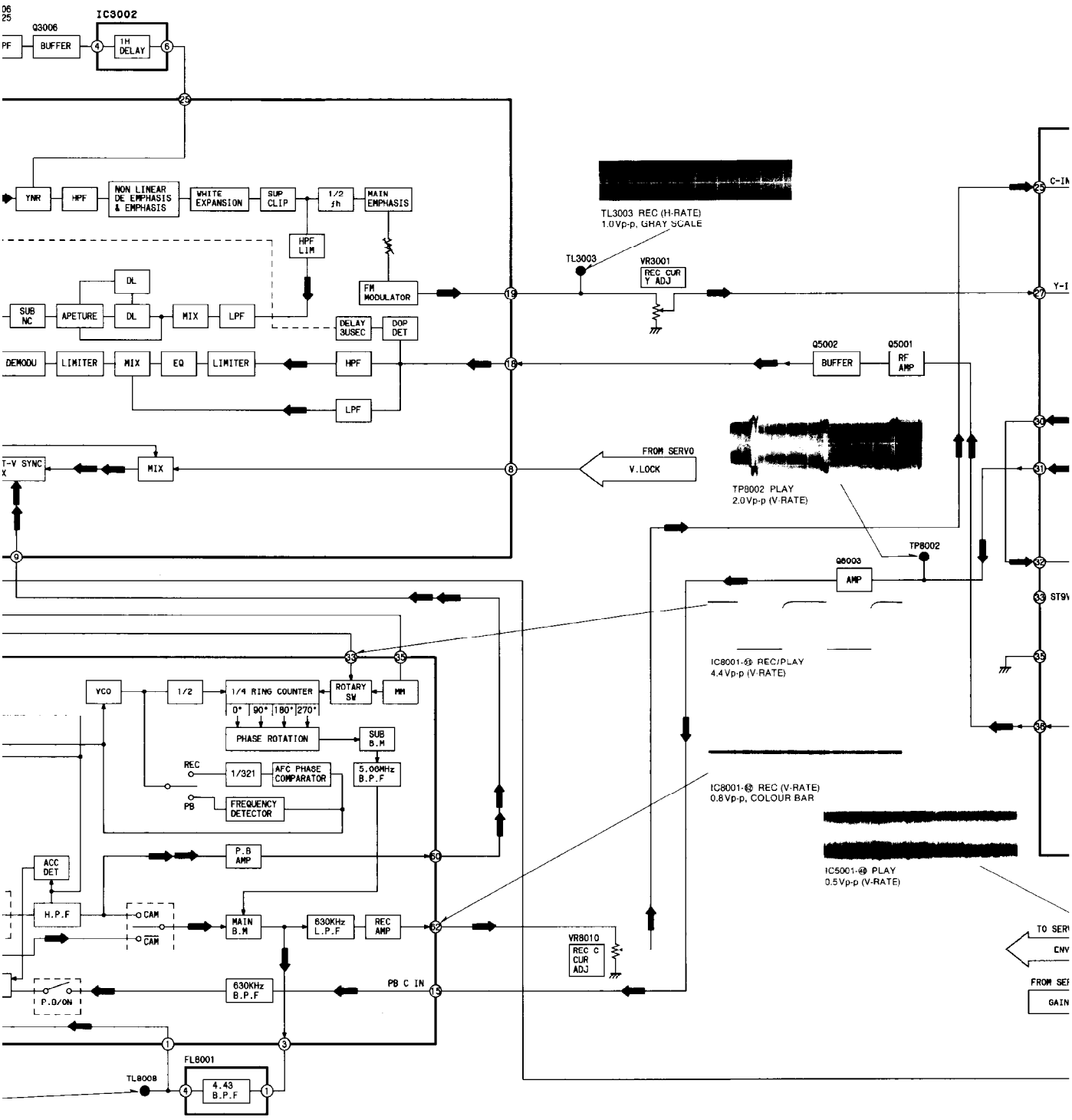


3-10. LUMINANCE/CHROMINANCE & HEAD AMP BLOCK DIAGRAM

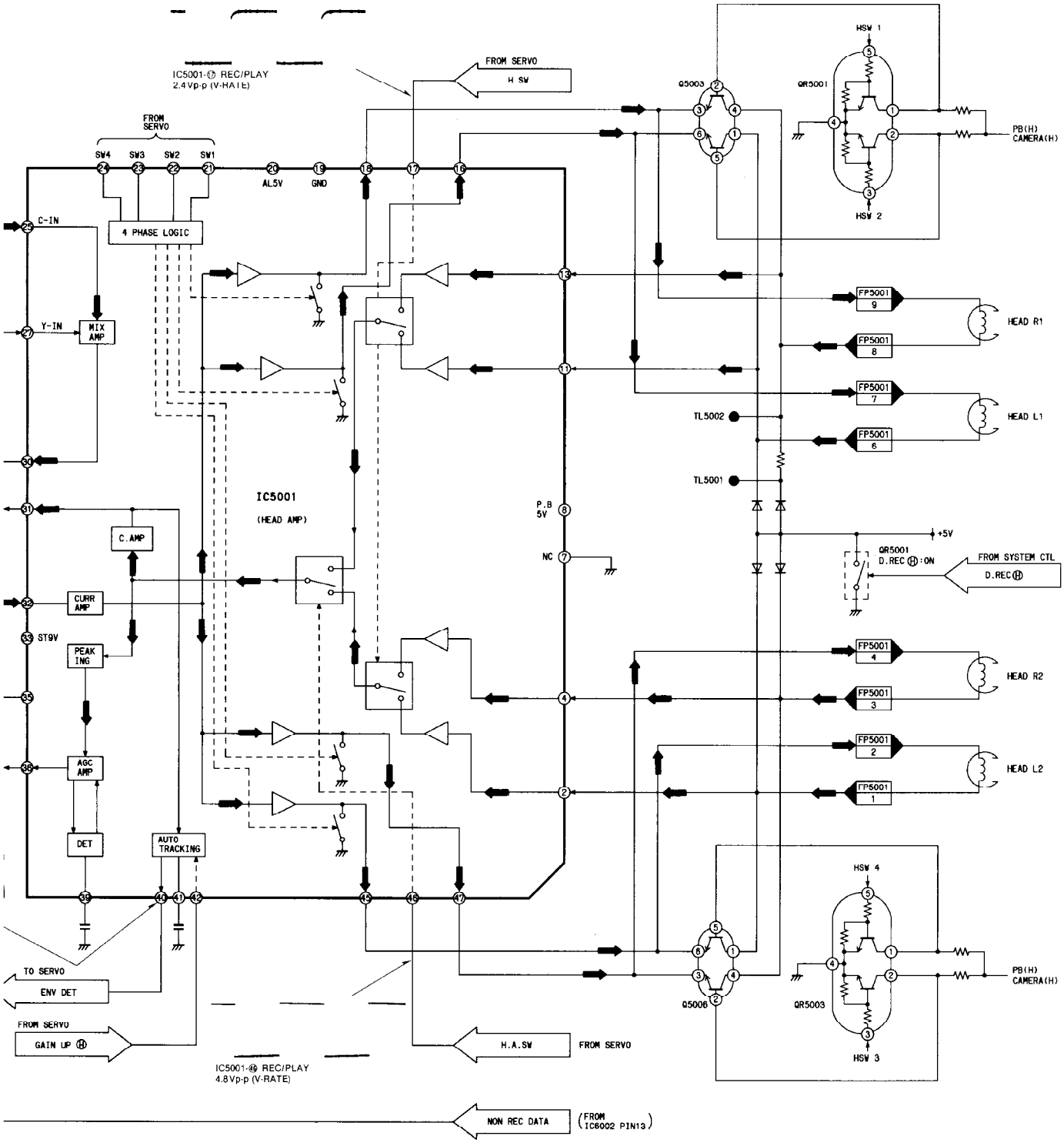


MAIN SIGNAL PATH IN REC MODE

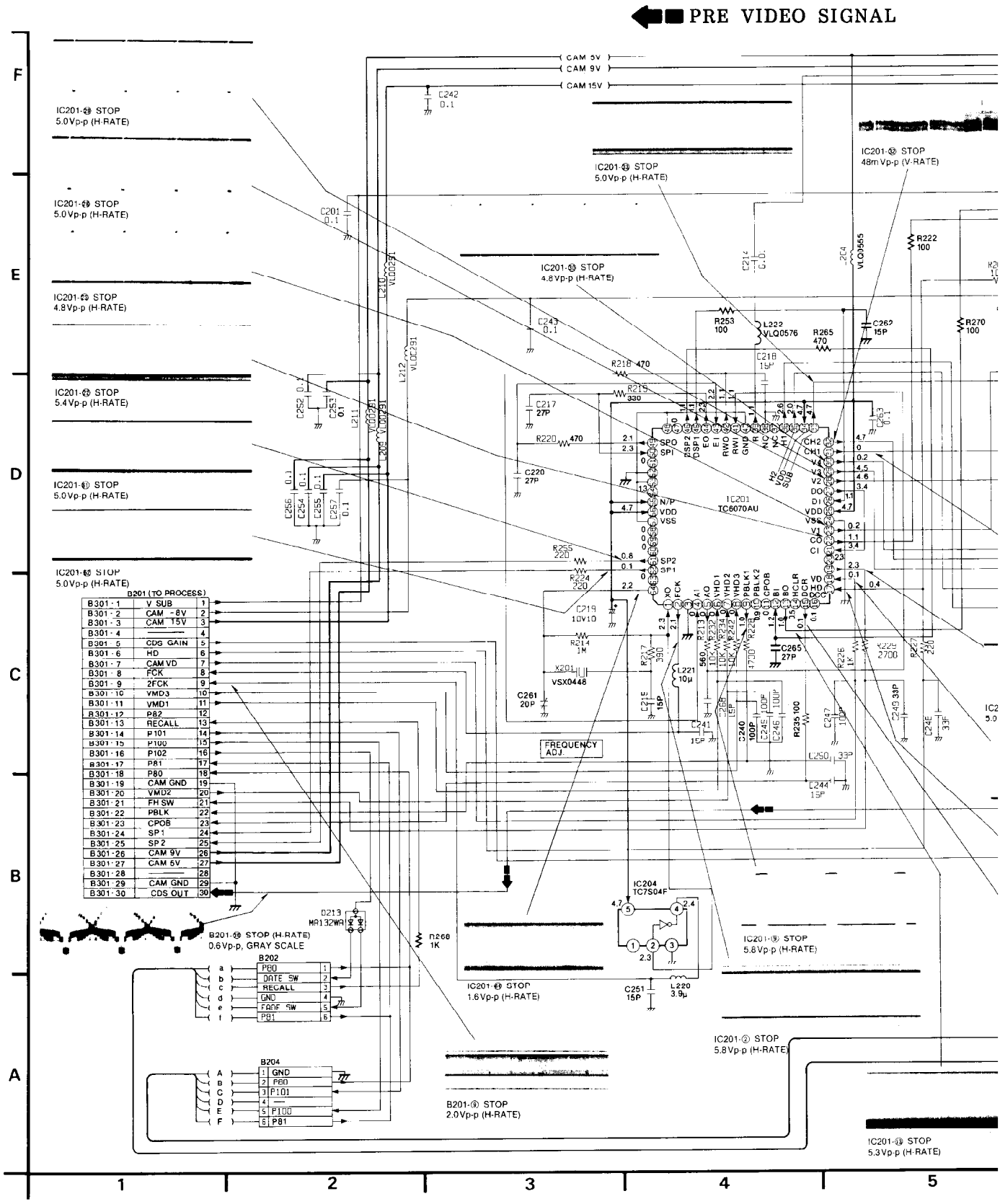
MAIN SIGNAL PATH IN PLAY



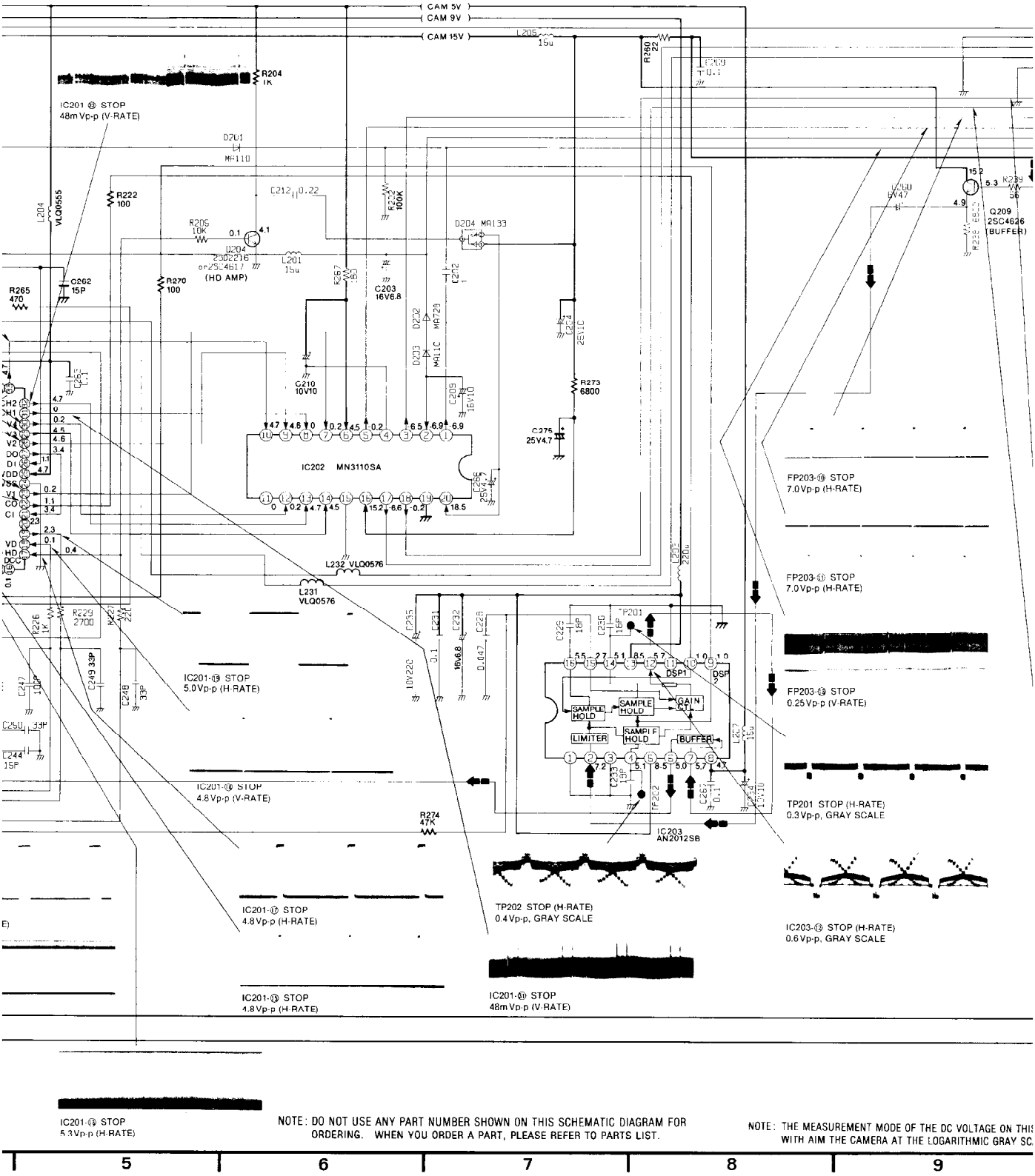
PLAYBACK MODE



3-11. CCD DRIVE SCHEMATIC DIAGRAM

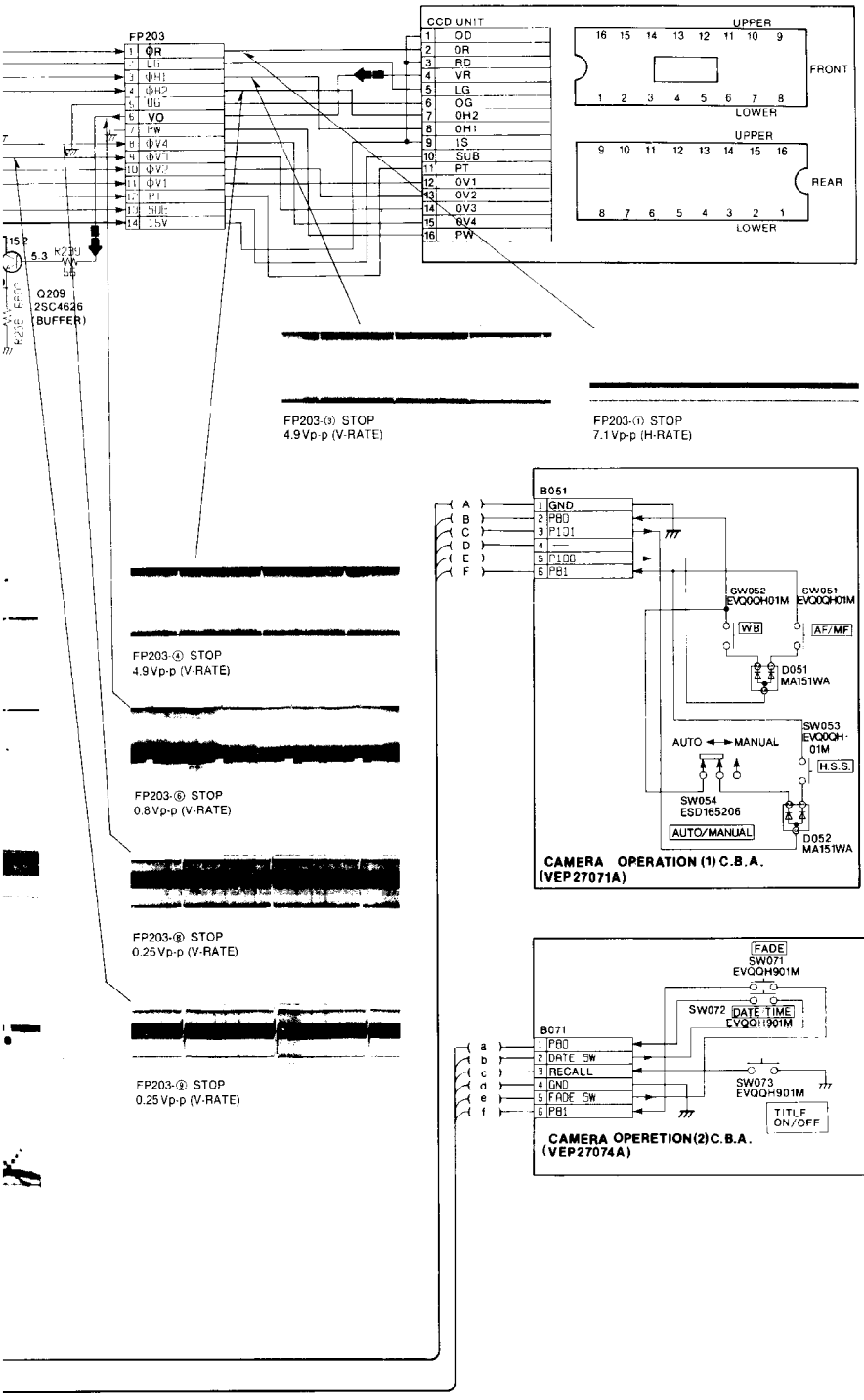


SIGNAL



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS
WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SC



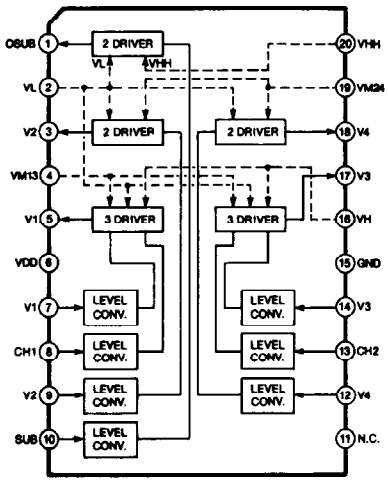
CCD DRIVE C.B.A.	
Transistor	
Q204	B-7 Ⓕ
Q205	D-6 Ⓕ
Q206	D-6 Ⓕ
Q207	D-4 Ⓒ
Q208	D-4 Ⓒ
Q209	B-3 Ⓒ
Integrated Circuit	
IC201	C-6 Ⓕ
IC202	C-7 Ⓕ
IC203	B-7 Ⓕ
IC204	C-3 Ⓒ
Test Point	
TP201	A-3 Ⓒ
TP202	A-3 Ⓒ
Adjustment	
C261	B-6 Ⓕ
Connector	
B051	E-5 Ⓕ
B071	E-8 Ⓕ
B202	D-5 Ⓕ
B204	D-3 Ⓒ
B201	B-8 Ⓕ
B202	D-5 Ⓕ
FP203	B-3 Ⓒ

ADDRESS INFORMATION
Ⓒ... COMPONENT SIDE
Ⓕ... FOIL SIDE

VOLTAGE ON THIS DIAGRAM IS STOP MODE
ITHMIC GRAY SCALE CHART.

IC BLOCK

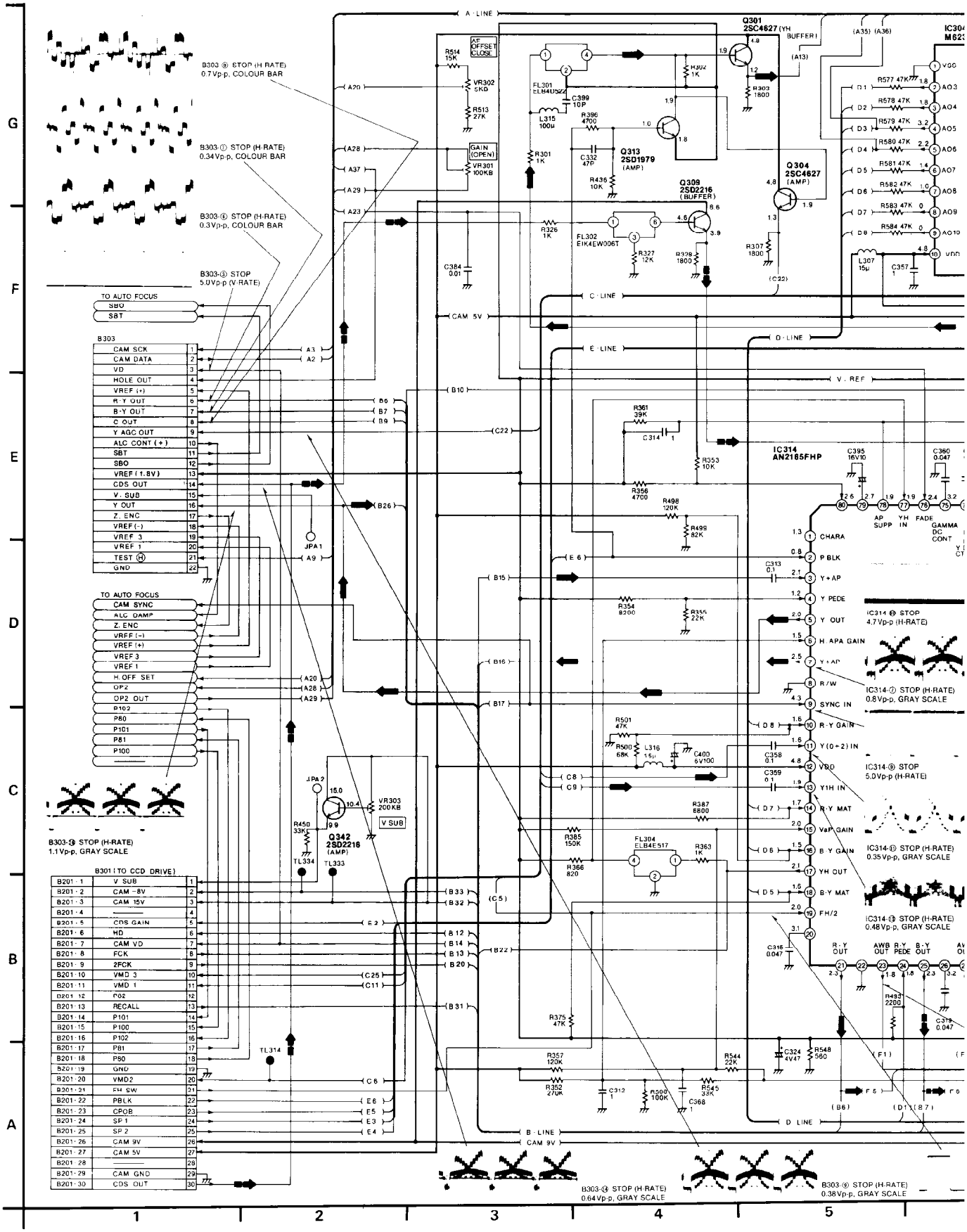
IC202 (MN3110SA)



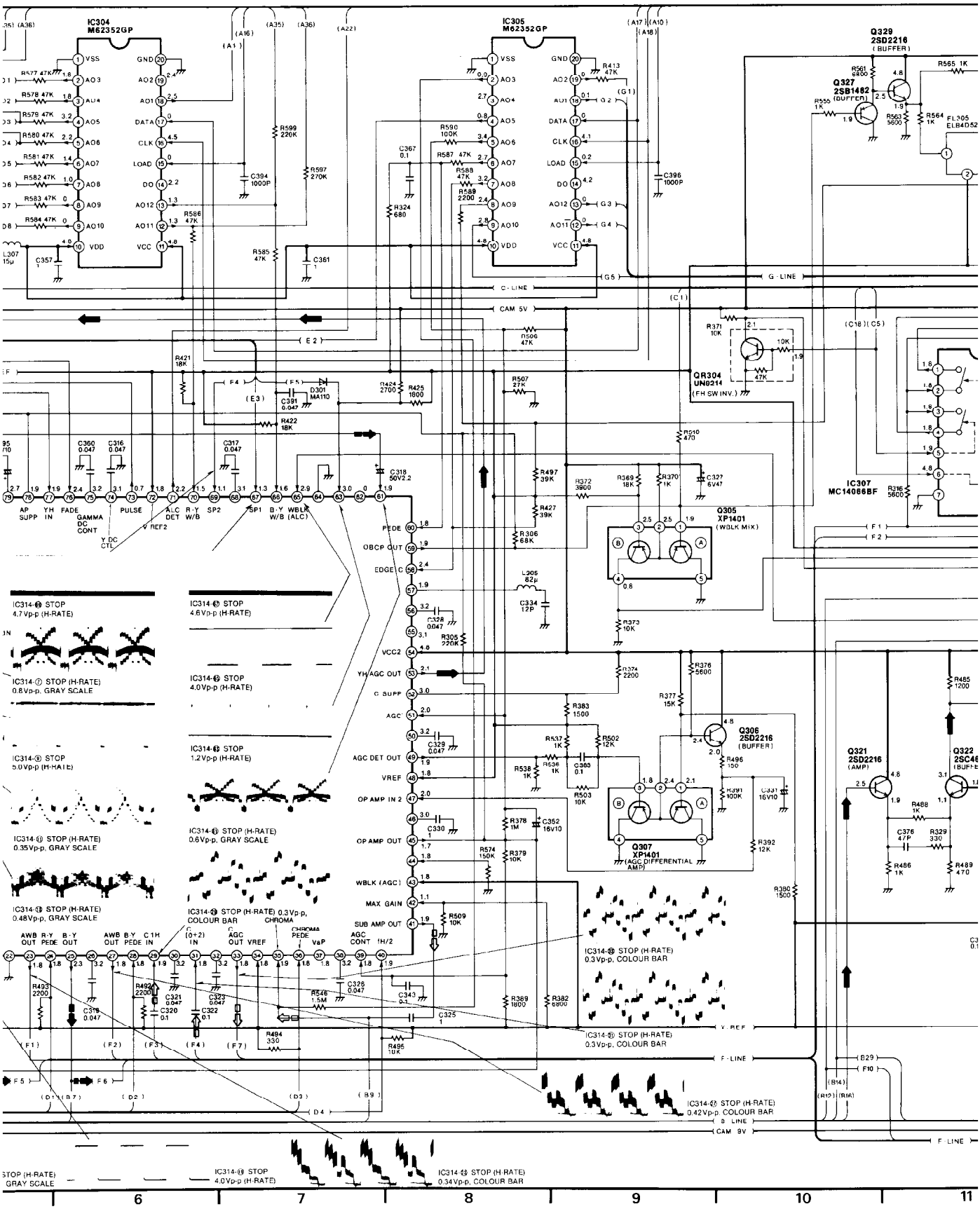
3-13. PROCESS SCHEMATIC DIAGRAM

PRE VIDEO SIGNAL

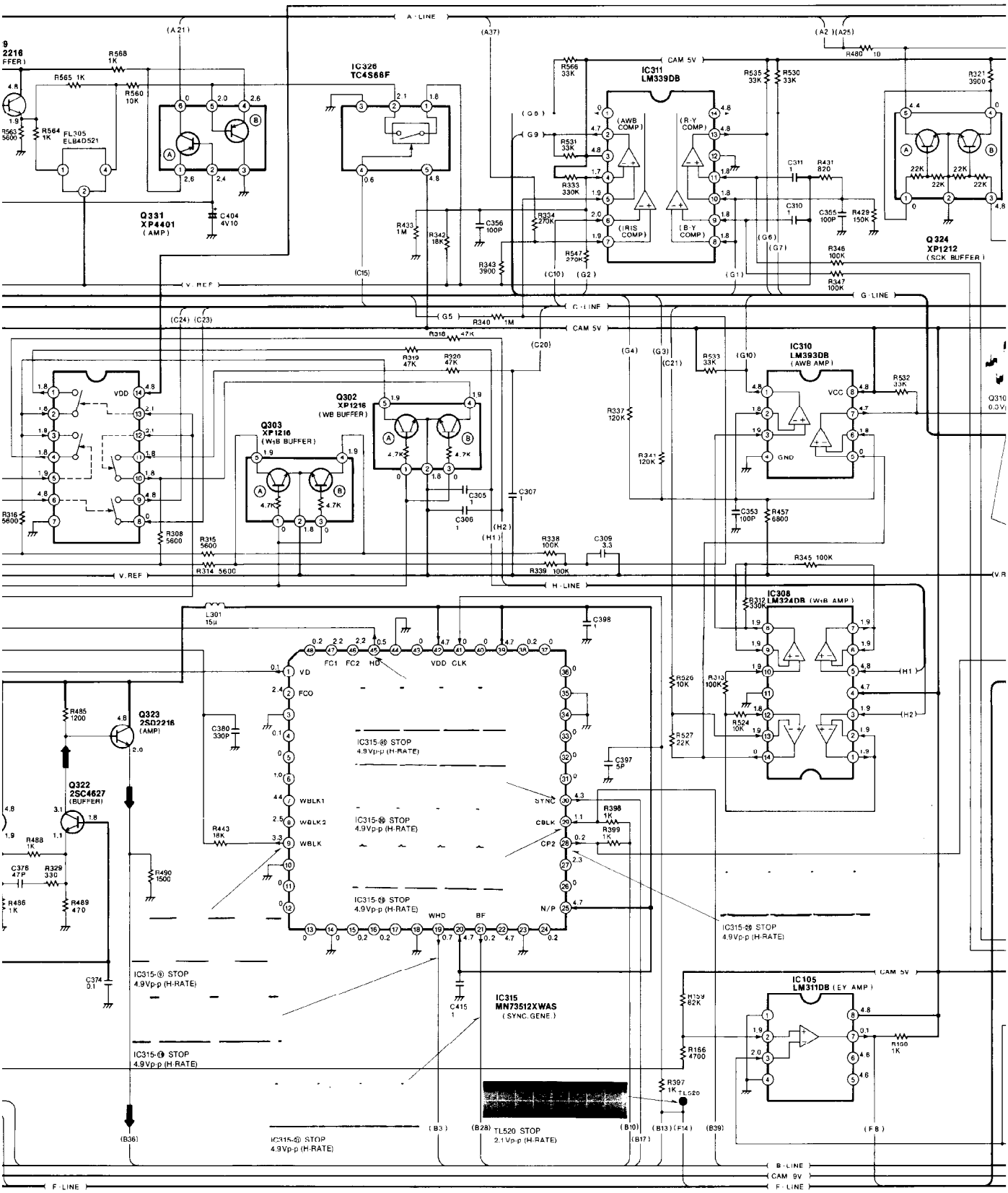
LUMINAN



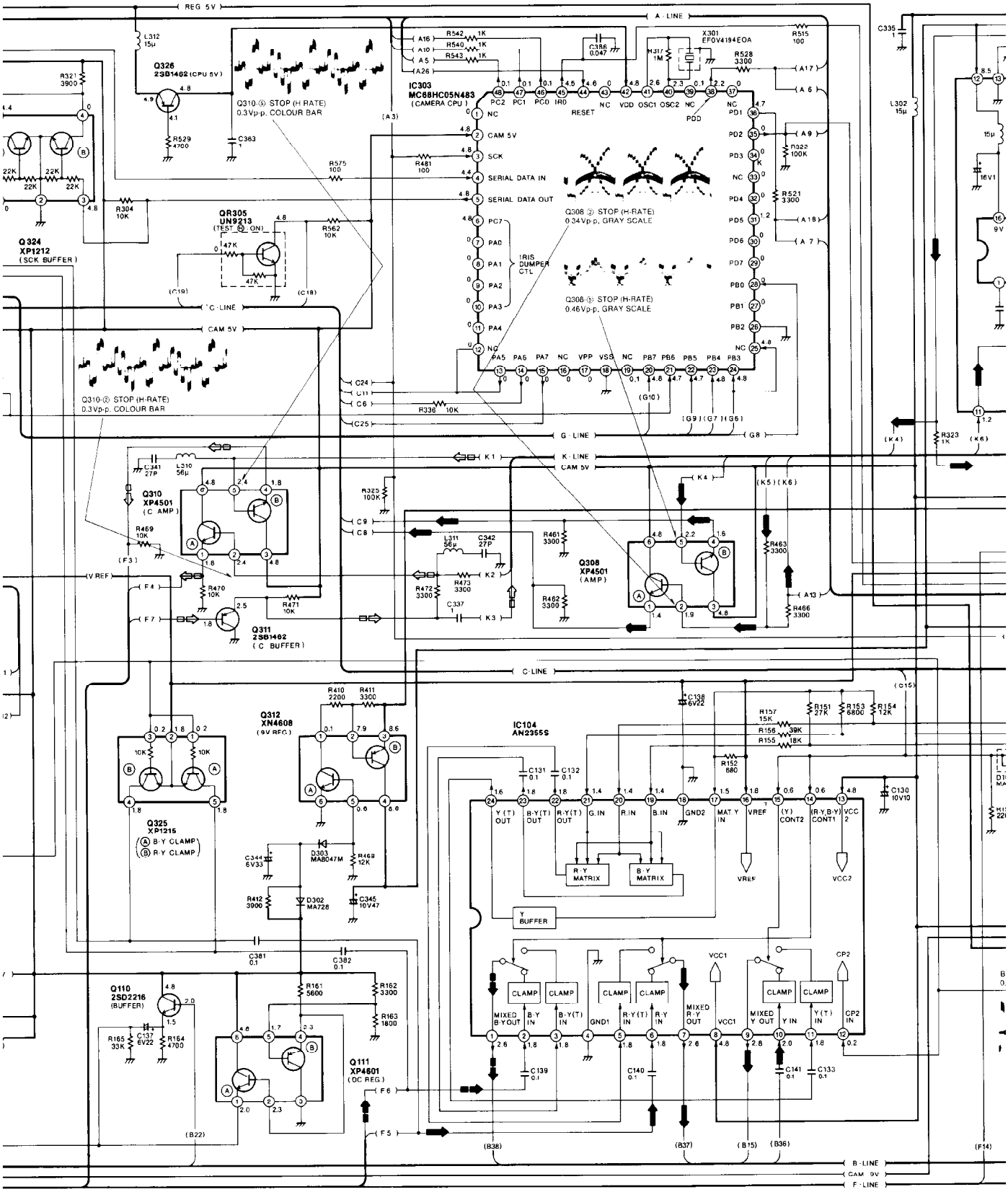
■ LUMINANCE SIGNAL ⇦□ R-Y/B-Y COMPOSITE SIGNAL ⬅ R-Y SIGNAL ⬅■ B-Y



B-Y SIGNAL



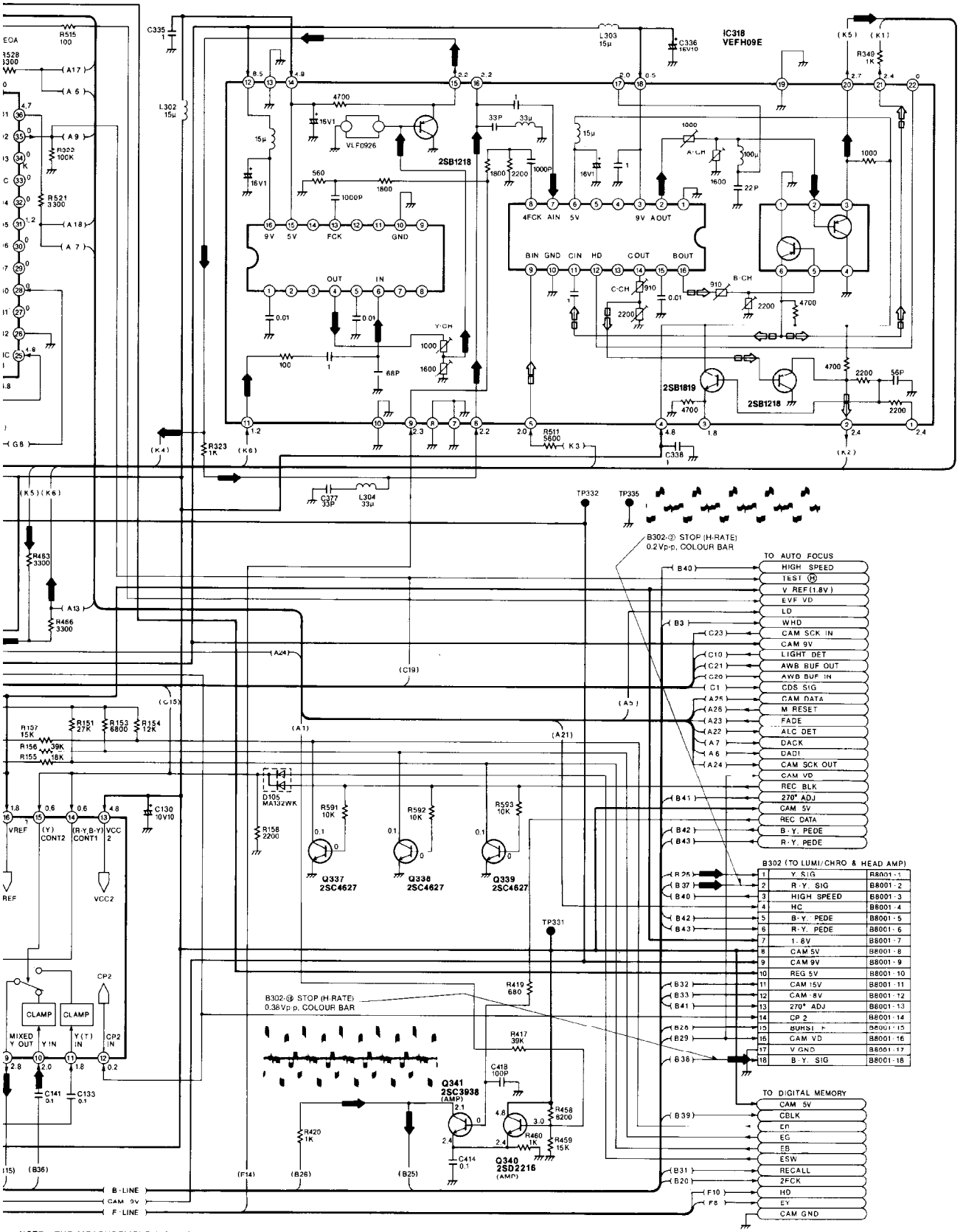
11 | 12 | 13 | 14 | 15 | 16



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTA WITH AIM THE CAMERA AT THE LOGARITHMI

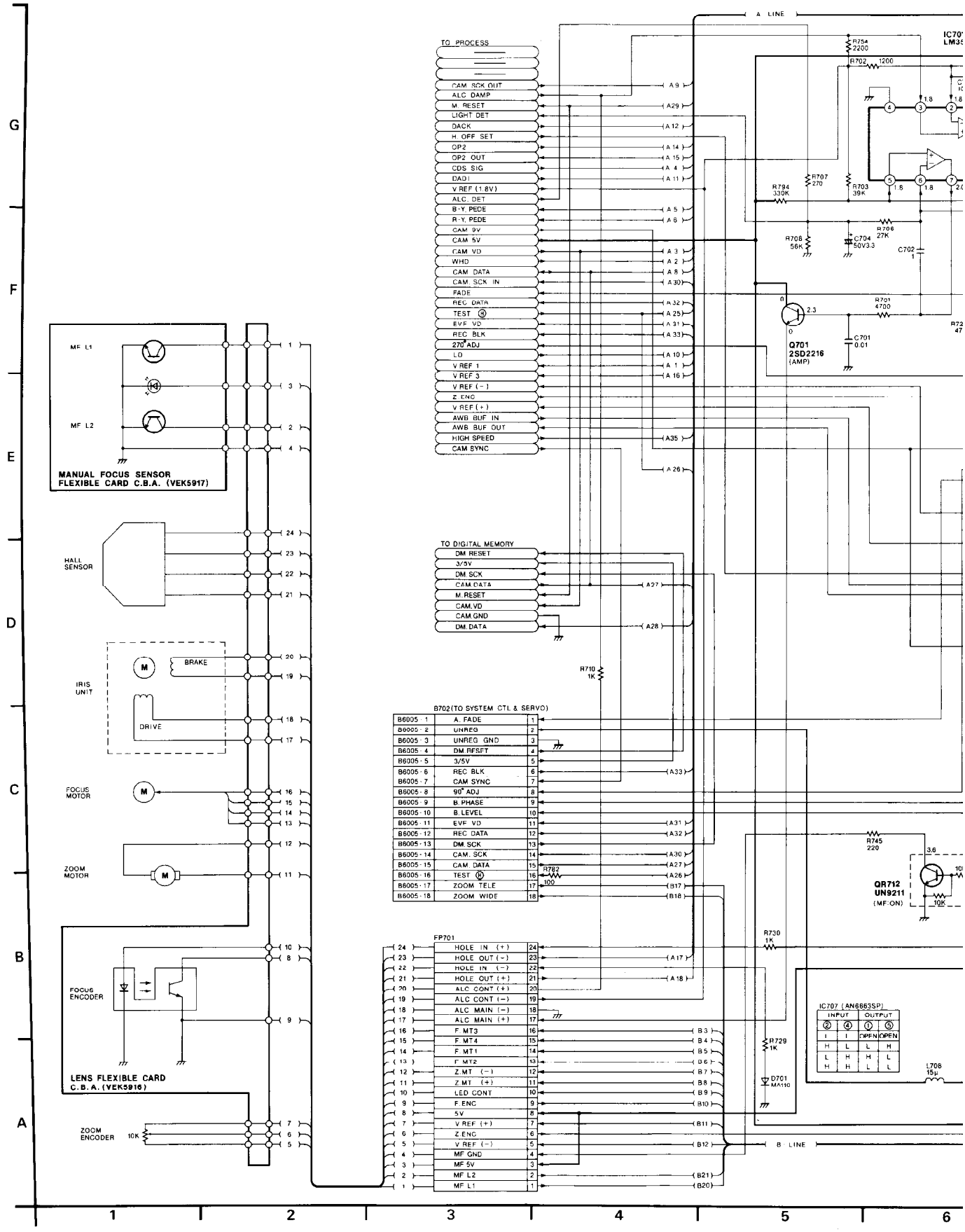
16 | 17 | 18 | 19 | 20 | 21

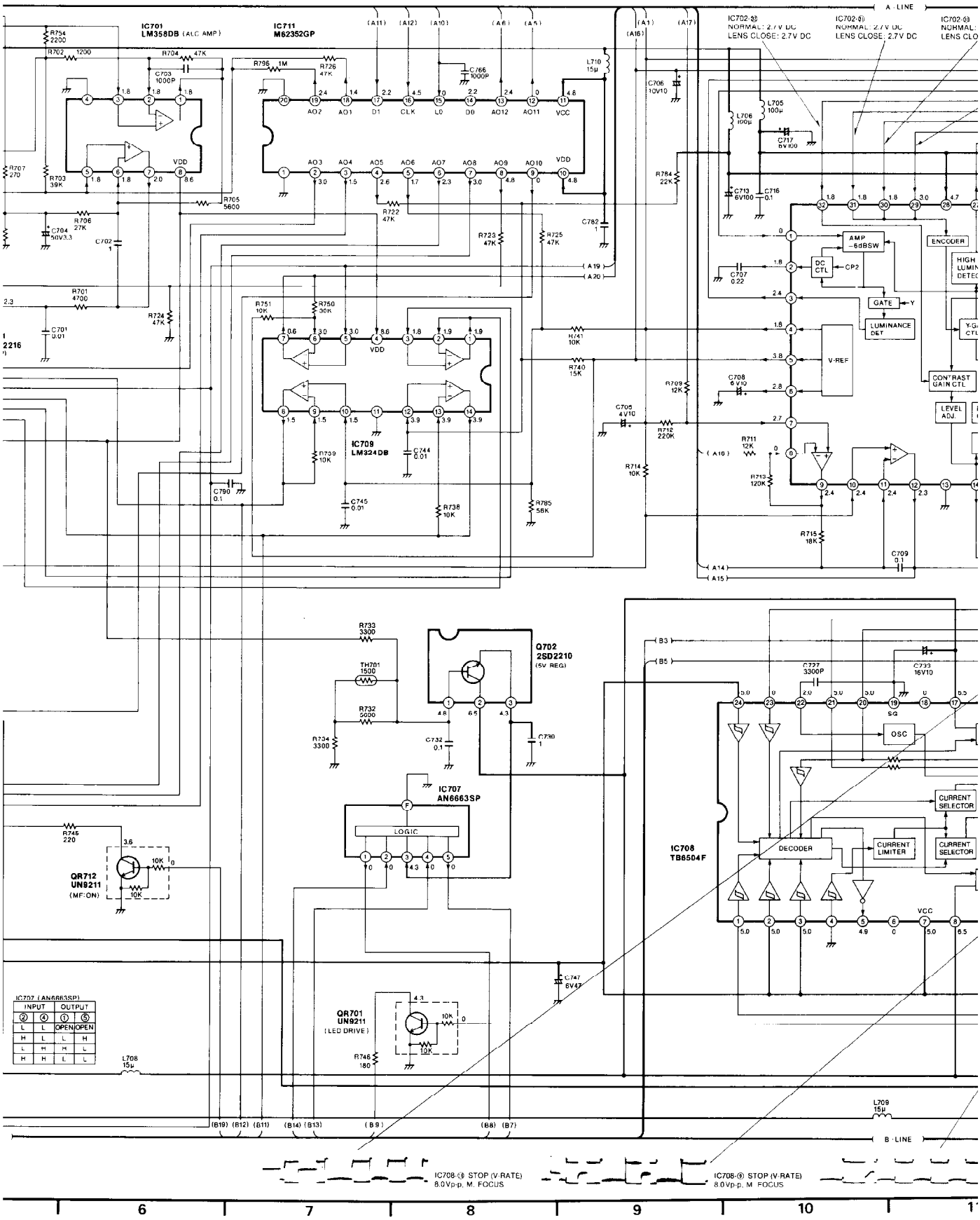


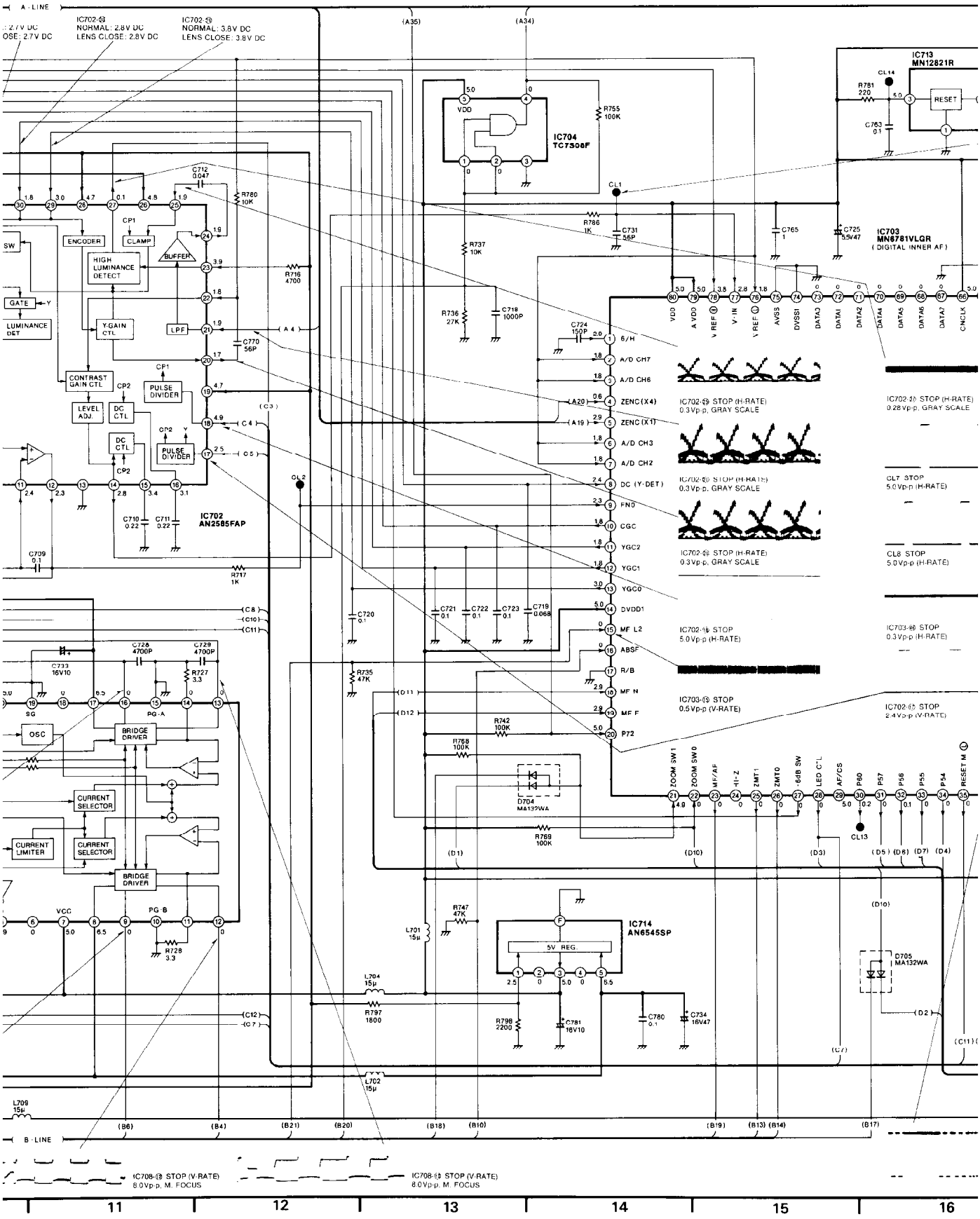
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE
WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

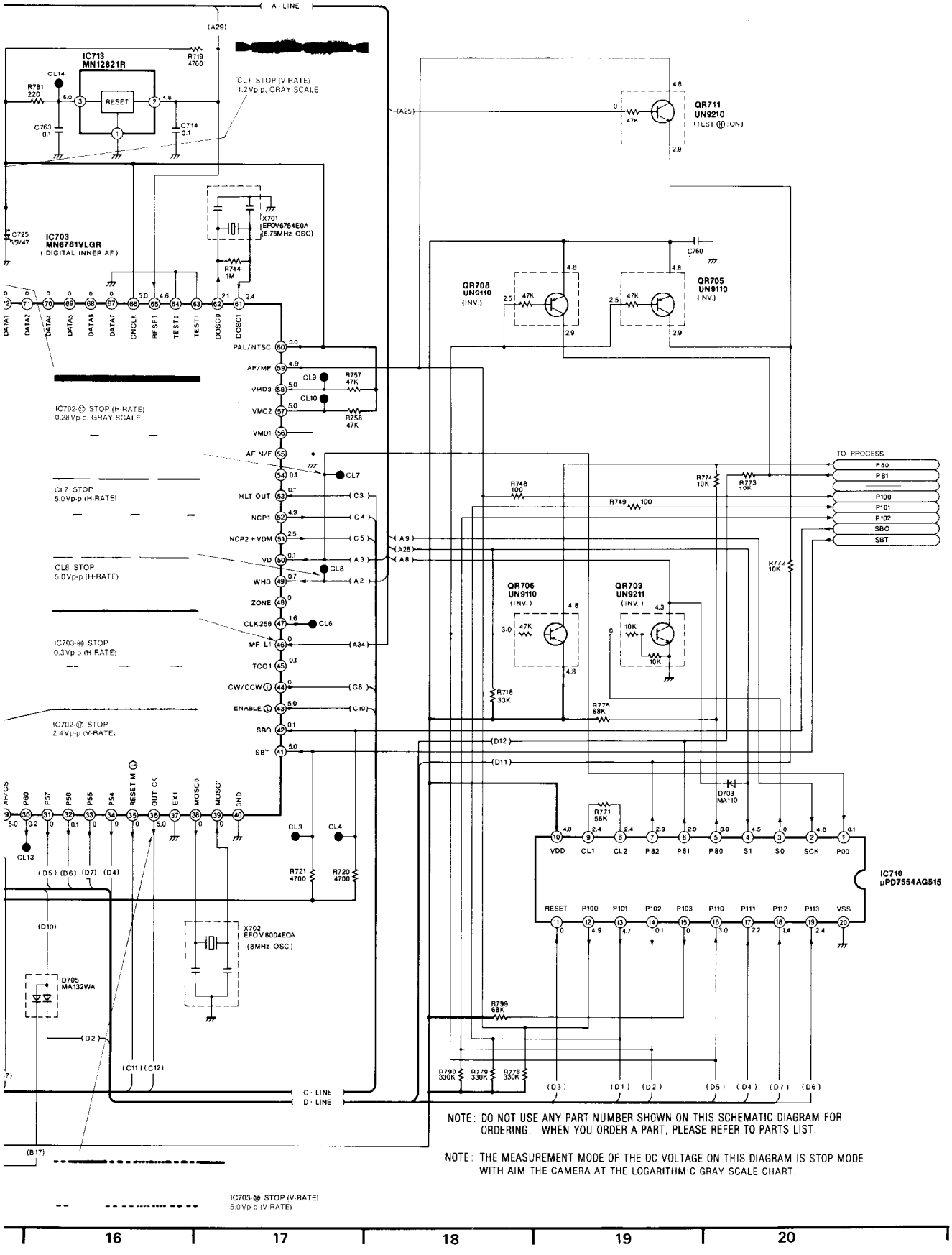
21	22	23	24	25

3-14. AUTO FOCUS SCHEMATIC DIAGRAM




IC701
LM358DB (ALC AMP)
IC711
M62352GP
IC709
LM324DB
IC707
AN6663SP
LOGIC
IC708
TB6504F
DECODER
OSC
CURRENT SELECTOR
CURRENT LIMITER
Q702
2SD2210
(5V REG)
QR712
UN9211
(MF:ON)
QR701
UN9211
(LED DRIVE)
AMP
-6dBSW
ENCODER
DC CTL
GATE
LUMINANCE DET
V-REF
CONTRAST GAIN CTL
LEVEL ADJ.
A-LINE
B-LINE
IC702-⑧ NORMAL: 2.7V DC LENS CLOSE: 2.7V DC
IC702-⑨ NORMAL: 2.7V DC LENS CLOSE: 2.7V DC
IC707 (AN6663SP)
INPUT ② ④
OUTPUT ① ⑤
L L OPEN OPEN
H L L H
L H H L
H H L L
IC708-⑧ STOP (V-RATE) 8.0Vp-p, M. FOCUS
IC708-⑨ STOP (V-RATE) 8.0Vp-p, M. FOCUS
6
7
8
9
10

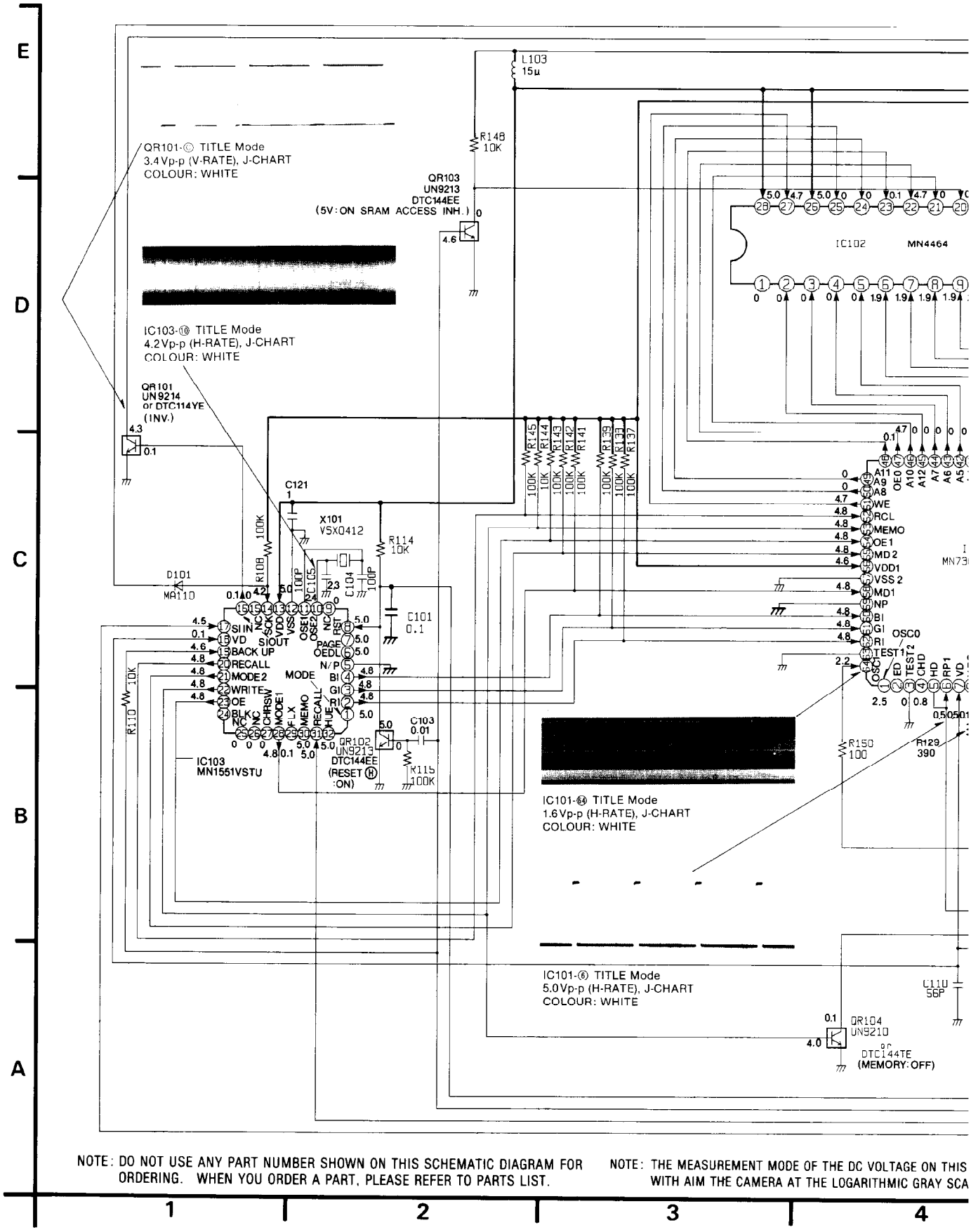

A-LINE
B-LINE
IC702
AN2585FAP
IC703
MN6781VLGR
(DIGITAL INNER AF)
IC704
TC7S08F
IC713
MN12821R
IC714
AN6545SP
IC702-⑭ NORMAL: 2.8V DC LENS CLOSE: 2.8V DC
IC702-⑮ NORMAL: 3.8V DC LENS CLOSE: 3.8V DC
IC702-⑭ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
IC702-⑮ STOP (H-RATE) 0.28Vp-p, GRAY SCALE
IC702-⑨ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
IC702-⑧ STOP (H-RATE) 0.3Vp-p, GRAY SCALE
IC702-⑯ STOP 5.0Vp-p (H-RATE)
IC703-㊽ STOP 0.3Vp-p (H-RATE)
IC703-㊾ STOP 0.5Vp-p (V-RATE)
IC702-⑰ STOP 2.4Vp-p (V-RATE)
IC708-⑫ STOP (V-RATE) 8.0Vp-p, M. FOCUS
IC708-⑬ STOP (V-RATE) 8.0Vp-p, M. FOCUS
CL7 STOP 5.0Vp-p (H-RATE)
CL8 STOP 5.0Vp-p (H-RATE)
11
12
13
14
15
16

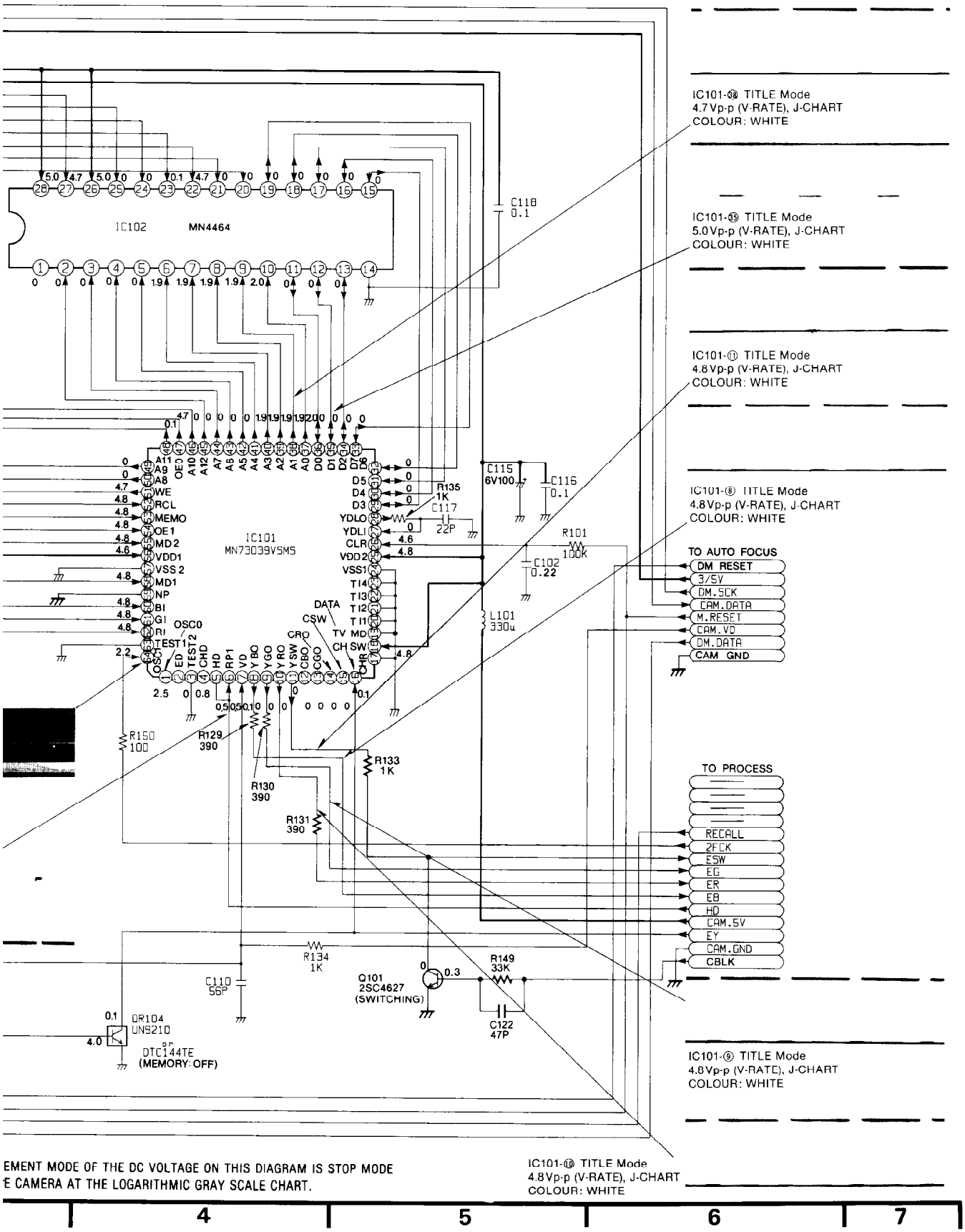


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

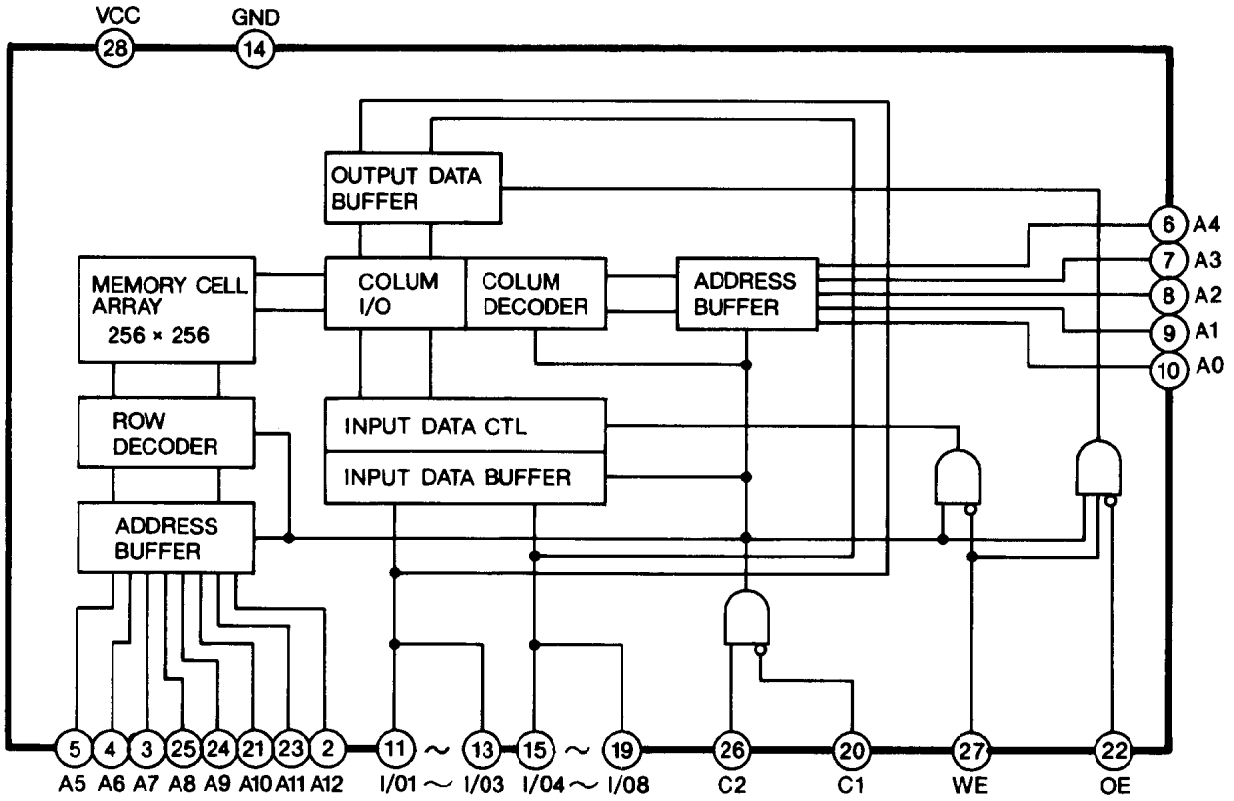
3-15. DIGITAL MEMORY SCHEMATIC DIAGRAM



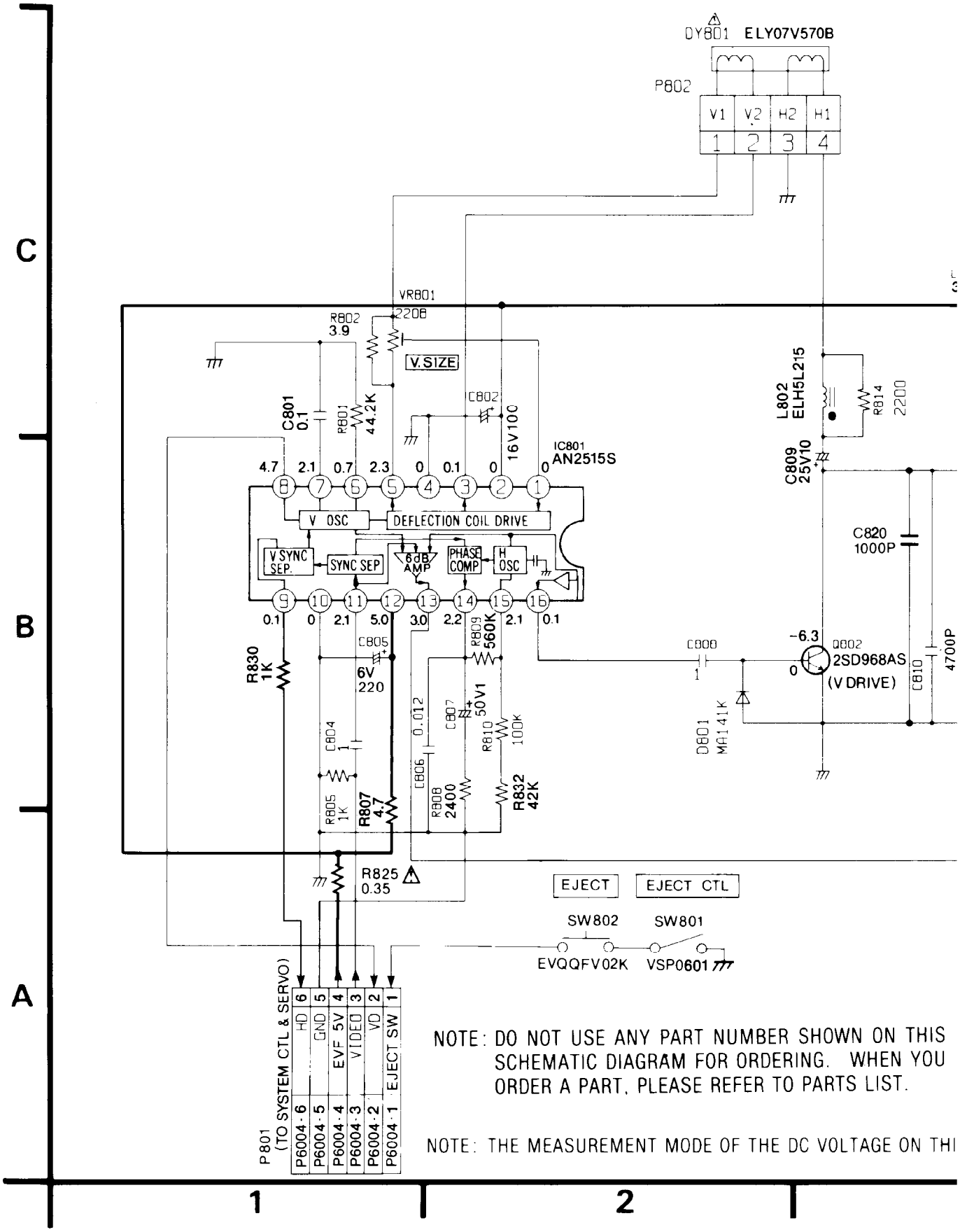

IC101-㊳ TITLE Mode
4.7Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-㉟ TITLE Mode
5.0Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑪ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑧ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑨ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC101-⑩ TITLE Mode
4.8Vp-p (V-RATE), J-CHART
COLOUR: WHITE
IC102 MN4464
IC101 MN730039VSMS
C118 0.1
C115 6V100
C116 0.1
C117 22P
C102 0.22
R101 100K
R135 1K
L101 330u
R150 100
R129 390
R130 390
R133 1K
R131 390
R134 1K
C110 56P
Q101 2SC4627 (SWITCHING)
R149 33K
C122 47P
DR104 UNS210 or DTC144TE (MEMORY: OFF)
TO AUTO FOCUS
DM RESET
3/5V
DM.SCK
CAM.DATA
M.RESET
CAM.VD
DM.DATA
CAM GND
TO PROCESS
RECALL
2FCK
ESW
EG
ER
EB
HD
CAM.5V
EY
CAM.GND
CBLK
EMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE
E CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

IC BLOCK

IC102 (MN4464)

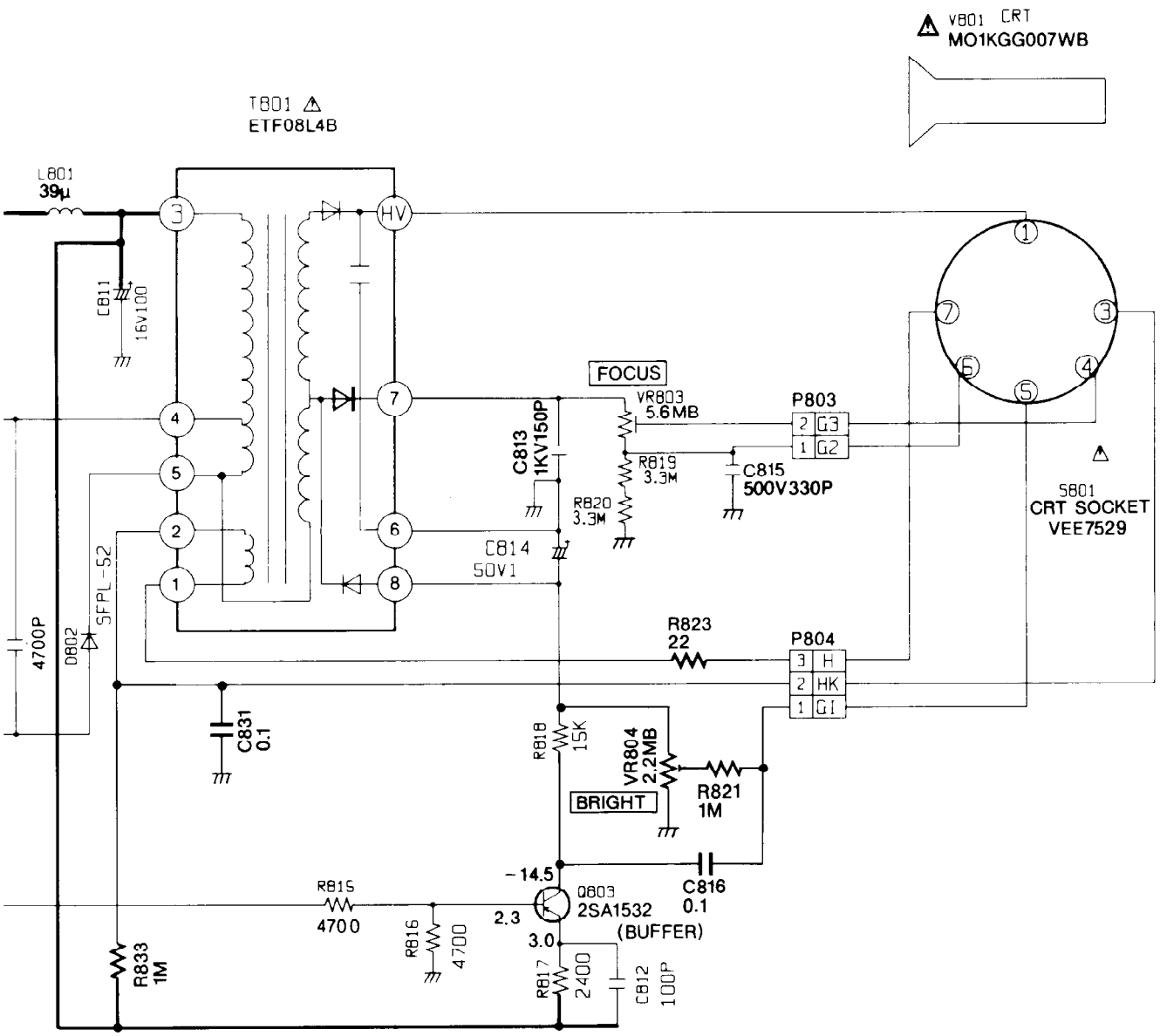


3-17. E.V.F. SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THI

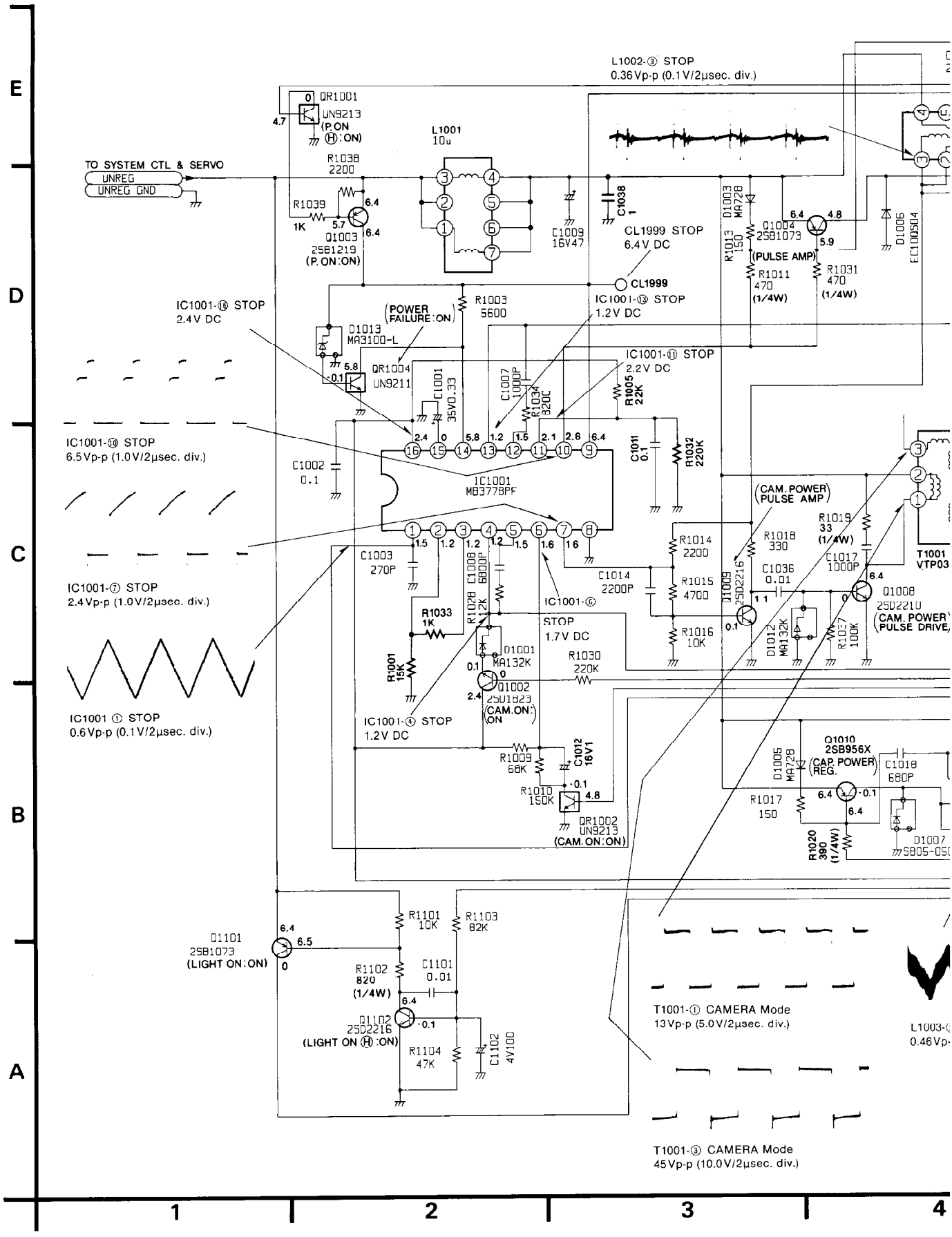


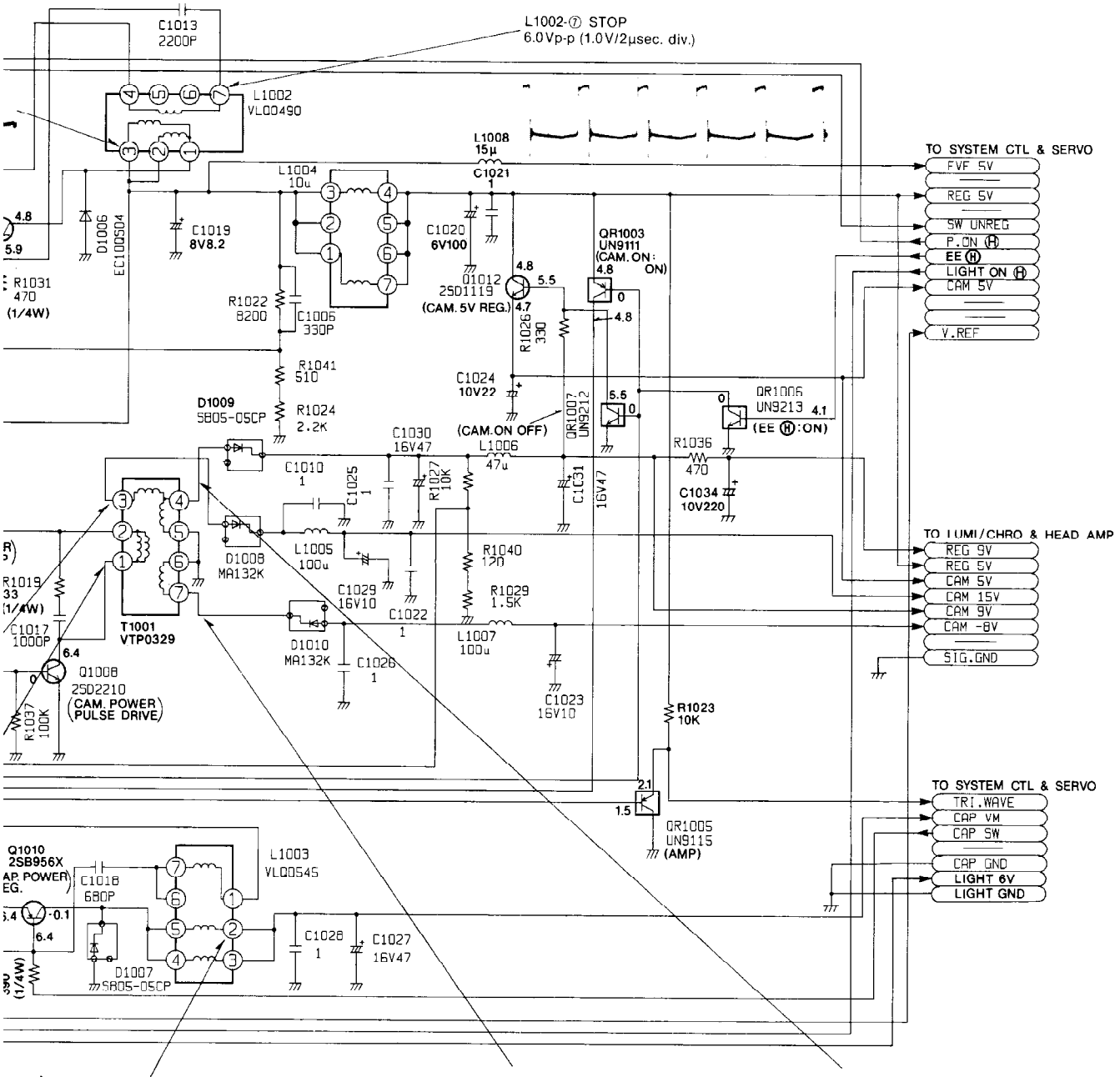
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

THIS DIAGRAM IS STOP MODE.

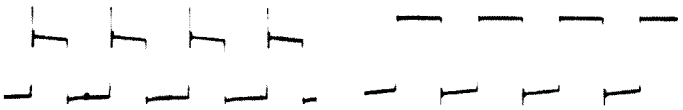
3 4 5

3-19. POWER SCHEMATIC DIAGRAM





L1003-② PLAY
0.46Vp-p (0.1V/10msec. div.)



T1001-⑦ CAMERA Mode
30Vp-p (10.0V/2μsec. div.)

T1001-④ CAMERA Mode
25Vp-p (10.0V/2μsec. div.)

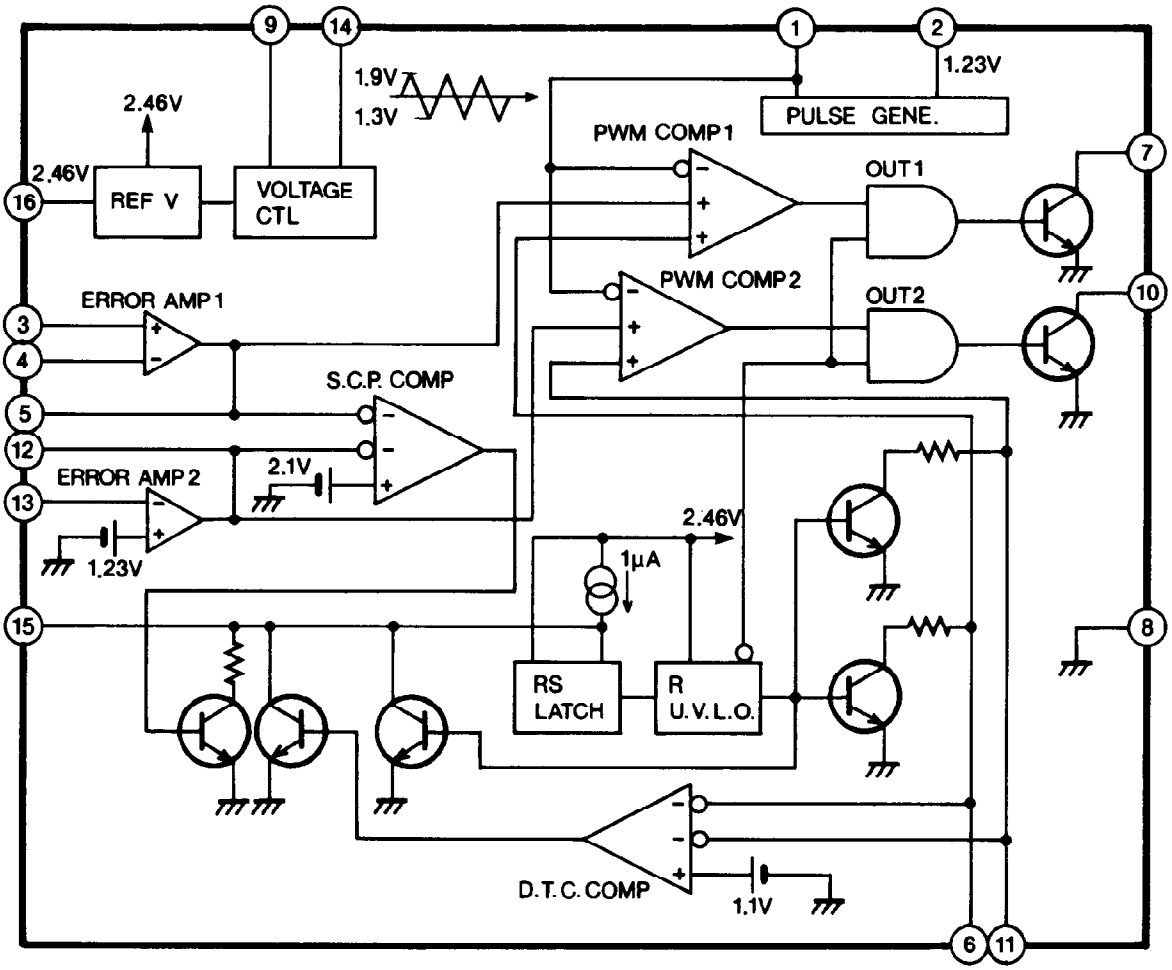
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

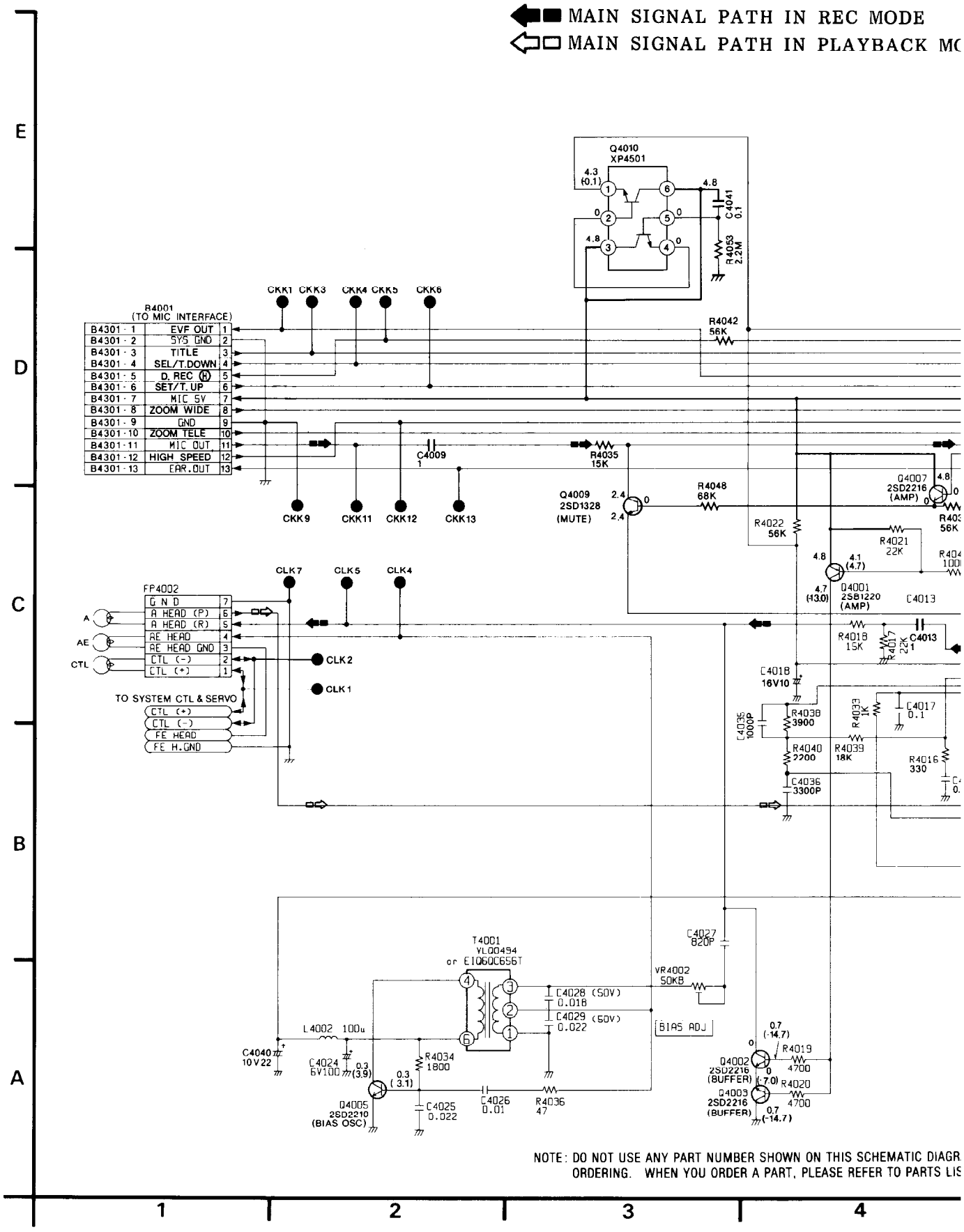
4 5 6 7

IC BLOCK

IC1001 (MB3778PF)

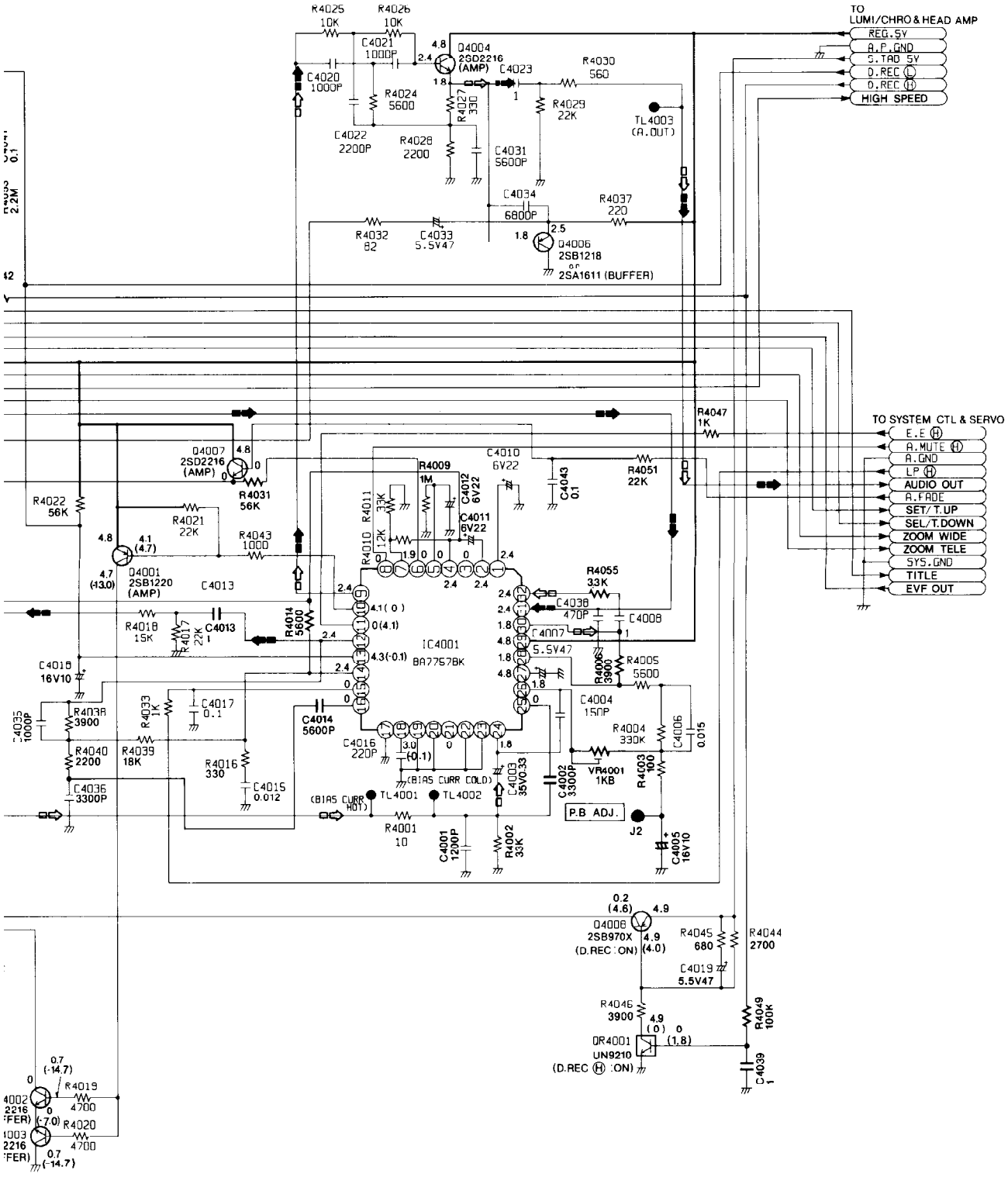


3-20. AUDIO SCHEMATIC DIAGRAM



ATH IN REC MODE

ATH IN PLAYBACK MODE

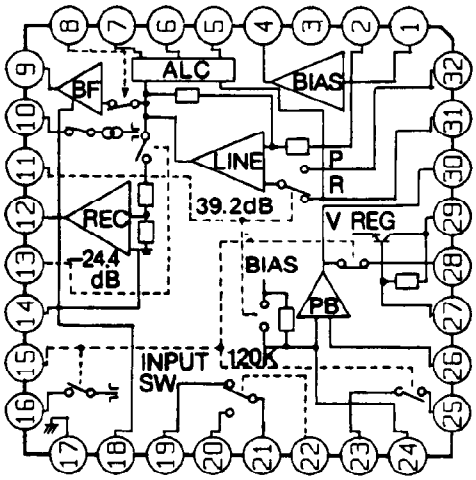


MBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR DER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

IC BLOCK

IC4001 (BA7757BK)



SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

REF. NO.	IC6001										IC6003									
MODE	1	2	3	4	5	6	7	8			1	2	3							
STOP	4.9	−0.1	0	0	4.8	−0.1	5.0	56.4			−0.1	4.8	4.9							
PLAY	5.0	0	0	0	5.0	0	5.0	6.6			0	4.9	5.0							
F.F.	4.9	−0.1	0	0	4.8	−0.1	5.0	6.3			0	4.8	4.9							
REF. NO.	IC6004																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	3.0	4.5	0	0	4.5	4.6	−0.1	−0.1	−0.1	0	0	0	0	4.8						
PLAY	3.0	4.5	0	0	4.7	4.7	0	0	0	0	0	0	0	4.9						
F.F.	2.9	4.5	4.7	1.8	4.5	4.7	−0.1	−0.1	−0.1	−0.1	−0.1	0	0	4.8						
REF. NO.	IC6005																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	0	4.8	4.7	4.8	−0.1	−0.1	−0.1	−0.1	3.0	4.7	4.8	−0.1	−0.1	−0.1	4.7	4.8				
PLAY	0	4.6	4.8	4.8	0	4.8	0.1	0	0	3.7	0	0	0	0	4.9	4.8				
F.F.	0	4.8	4.6	4.8	−0.1	−0.1	−0.1	−0.1	3.0	4.7	4.8	−0.1	−0.1	−0.1	4.7	4.8				
REF. NO.	IC6006																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	−0.1	4.7	0	4.7	0	4.8	1.5	2.1	2.3	−0.1	0.8	−0.1	0	−0.1	0	0	−0.1	4.5	3.9	4.8
PLAY	0	4.8	0	0	0	0	0	2.2	2.3	0	1.0	0	0	0	0	0	0	4.2	3.9	4.8
F.F.	−0.1	0	0	0	0	4.8	1.4	2.1	2.3	−0.1	1.0	−0.1	0	0	0	0	−0.1	4.1	3.9	4.7
REF. NO.	IC6007																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	4.6	4.6	4.6	4.6	4.7	4.7	4.4	4.7	4.6	4.7	4.8	0	0	4.6	3.0	4.7	4.5	0	4.3	0
PLAY	4.7	4.7	4.7	4.7	4.7	4.5	0	4.8	0	4.8	4.8	0	0.2	0	0	0	4.7	4.6	4.4	4.8
F.F.	4.7	4.6	4.6	4.5	4.6	4.5	4.6	0	4.7	4.7	0	0	0	4.6	2.9	4.7	4.6	4.6	4.4	4.8
REF. NO.	IC6007																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	−0.1	1.6	−0.1	2.3	−0.1	2.9	2.4	−0.1	−0.1	2.2	2.5	0.1	−0.1	2.0	1.8	0.9	1.6	0.1	4.7	2.4
PLAY	0	3.0	0	2.2	2.4	2.8	2.4	0	0	0	2.5	2.5	0	0.9	1.0	1.2	1.6	0.2	4.9	0
F.F.	−0.1	3.0	0	2.3	2.3	2.3	2.2	−0.1	−0.1	0	0		−0.1	2.2	0.8	0	0	0	0	−0.1
REF. NO.	IC6007																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0.1	−0.1	1.0	0	2.3	0.1	1.1	2.3	−0.1	2.3	2.3	2.1	2.6	4.8	−0.1	−0.1	−0.1	2.3	2.3	−0.1
PLAY	0	0	0.6	2.4	2.4	2.4	2.4	0	0	2.4	2.4	2.1	0	4.8	0	0	0	0	0	0
F.F.	0	−0.1	1.0	2.3	0	2.3	2.3	2.3	−0.1	2.3	2.3	2.3	2.6	0	−0.1	−0.1	−0.1	2.3	2.3	−0.1
REF. NO.	IC6007																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	2.4	2.4	4.8	1.0	2.9	4.4	4.4	−0.1	−0.1	0	4.7	−0.1	4.8	4.8	0	0.5	0	0	0	0
PLAY	2.7	2.4	4.8	1.0	2.9	4.3	4.5	0	0	0	0	4.9	0.4	4.8	4.9	0.1	0.6	0	0	0
F.F.	2.9	2.4	4.8	0.9	2.9	4.3	4.5	0	−0.1	0	4.7	−0.1	4.1	4.8	0	0.5	4.7	0	0	0
REF. NO.	IC6007																			
MODE	81	82	83	84																
STOP	4.7	4.7	4.6	1.8																
PLAY	0.1	4.8	4.9	4.6																
F.F.	4.8	4.7	4.6	1.8																
REF. NO.	IC6008																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0.1	0	0.1	0.1	0	0	0.1	0	0.1	4.7	0.1	0.4	0.1	0.1						
PLAY	0	0	0	0	0	0	0	0	0	4.8	0	0.6	0	0						
F.F.	−0.1	0.1	−0.1	0	0	0	−0.1	−0.1	−0.1	4.7	−0.1	0.5	−0.1	−0.1						
REF. NO.	IC6009										IC6010									
MODE	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8		
STOP	0	0	−0.1	0	0	6.4	0	0	0	6.4	4.8	2.4	3.4	−0.1	4.6	0	3.2	6.4		
PLAY	0.1	0	0	0	0	6.6	4.8	0	4.8	6.6	4.8	2.4	3.5	0	4.8	2.4	3.4	6.6		
F.F.	0	0	0	0	0	6.2	4.8	0	4.8	6.2	4.7	2.4	3.3	−0.1	4.6	2.4	3.2	6.3		
REF. NO.	IC6012																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	4.6	4.7	4.8	4.5	4.8	−0.1	−0.1	4.7	0	4.7	4.8	4.7	4.7	4.8						
PLAY	4.6	0	4.8	0.2	0	0	0	4.8	0	4.7	4.8	4.7	4.8	4.8						
F.F.	4.6	2.4	4.8	−0.1	0.1	−0.1	−0.1	4.8	0	4.7	4.8	4.7	4.7	4.8						
REF. NO.	IC6013																			
MODE	1	2	3																	
STOP	4.8	−0.1	0																	
PLAY	4.8	0	0.2																	
F.F.	4.8	0	0																	
REF. NO.	IC6014																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	−0.1	4.6	4.6	4.8	4.6	0	−0.1	4.7	4.8	4.8	4.6	4.6	0	4.8						
PLAY	0	4.7	4.6	4.6	0	0	0	4.8	4.6	4.8	4.7	4.7	0	4.8						
F.F.	−0.1	4.6	4.6	4.6	4.6	0	−0.1	4.7	4.6	4.8	4.6	4.6	−0.1	4.8						
REF. NO.	IC6015																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	4.7	4.7	4.8	4.8	4.7	4.7	−0.1	4.7	4.7	4.8	4.8	4.8	4.7	4.8						
PLAY	4.7	4.8	4.8	4.8	4.7	4.8	0	4.8	4.7	4.8	4.8	4.8	4.7	4.8						
F.F.	0	4.7	4.8	4.8	4.7	4.7	−0.1	4.7	4.6	4.8	4.8	0	4.8	4.8						

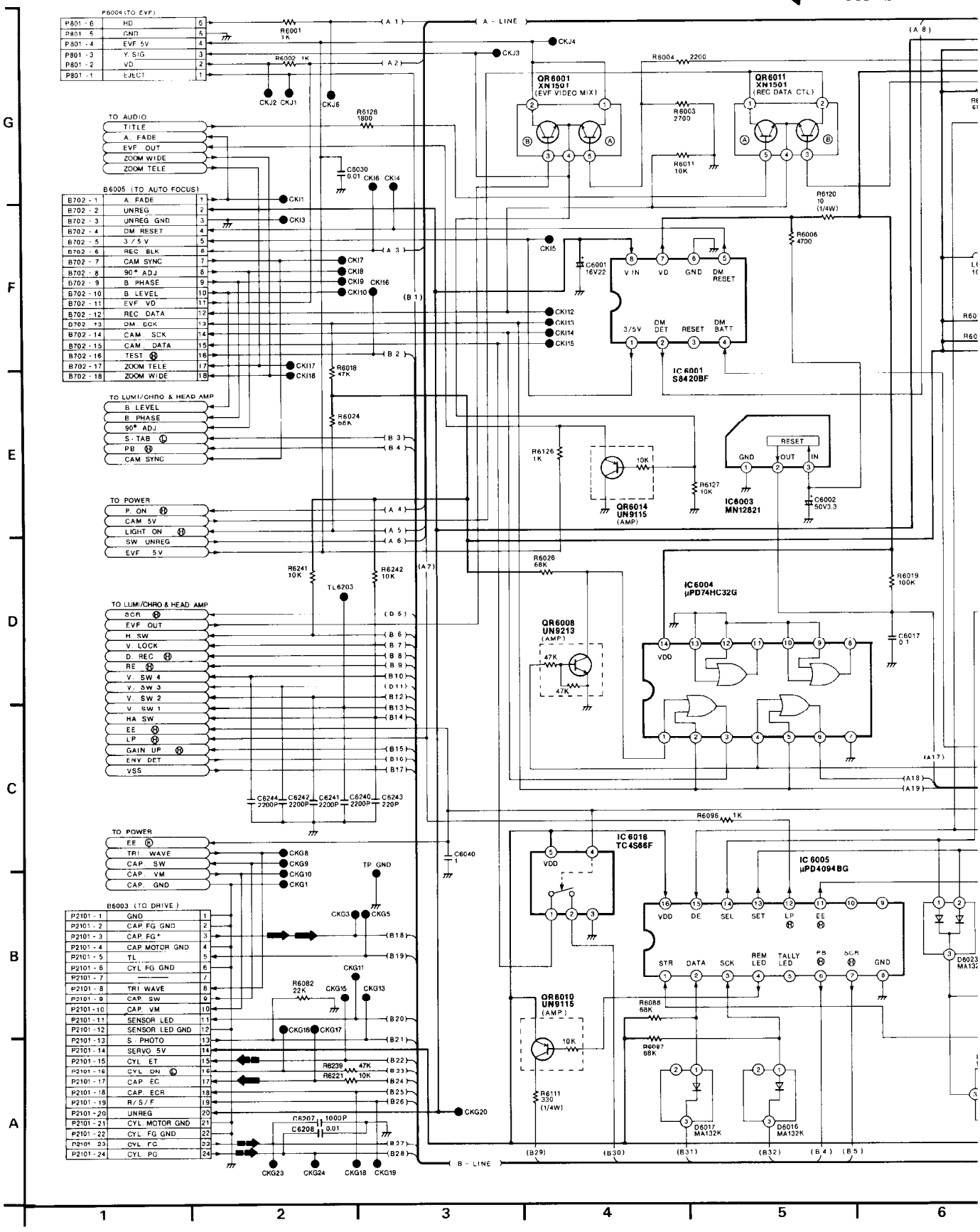
SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

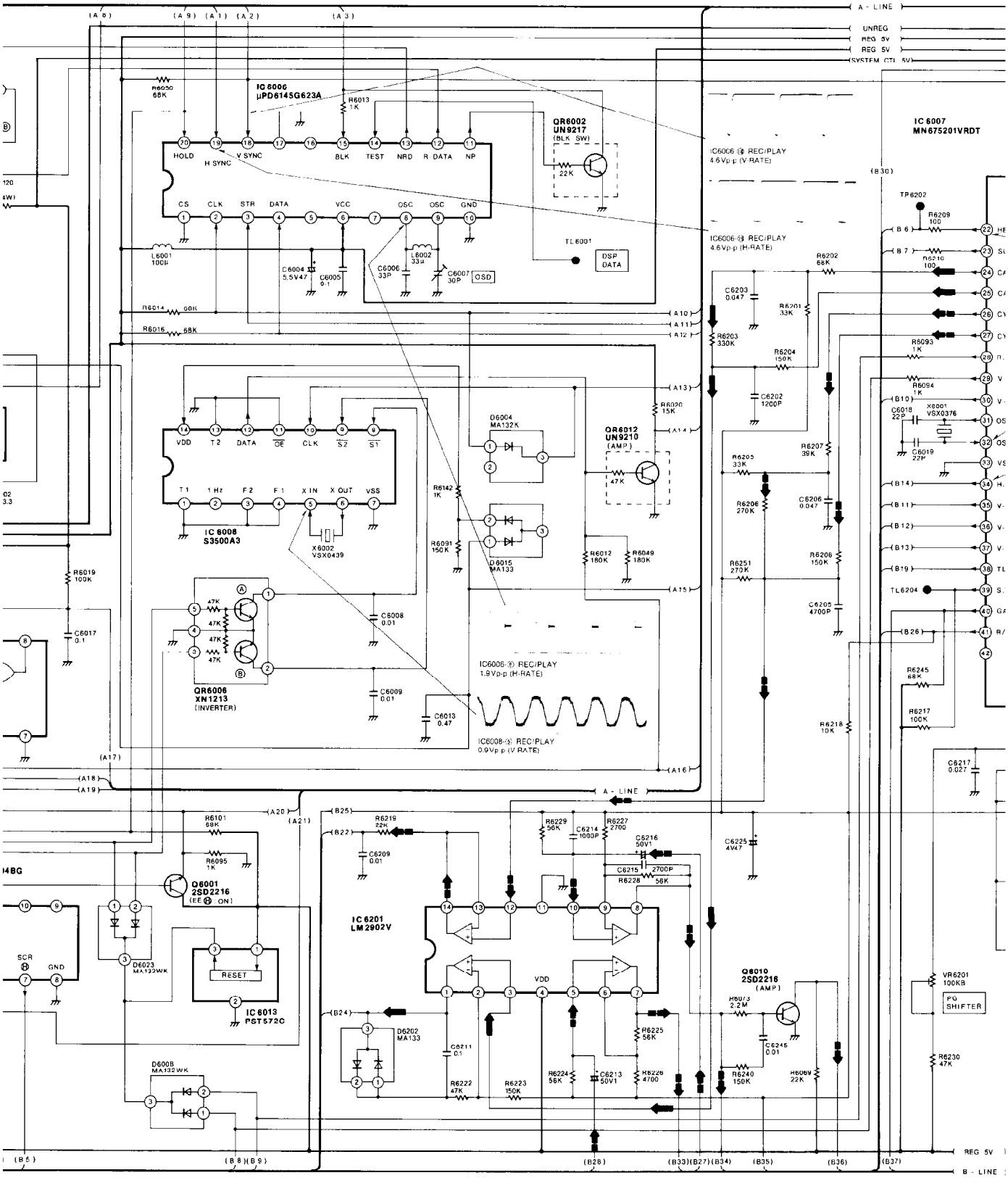
REF. NO.	IC6016																			
MODE	1	2	3	4	5															
STOP	4.4	4.4	−0.1	4.1	4.8															
PLAY	0.2	4.4	0	0	4.9															
F.F.	4.3	4.3	−0.1	4.1	4.8															
REF. NO.	IC6201																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	−0.1	1.0	0.7	4.8	2.3	2.3	2.3	0	2.3	2.3	−0.1	2.4	2.4	2.4						
PLAY	0	0	2.4	0	2.4	0	0	2.4	2.4	2.4	0	2.4	2.4	2.4						
F.F.	0.8	0	2.3	4.8	2.3	2.3	0	0	2.3	2.3	0	2.4	2.4	0						

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

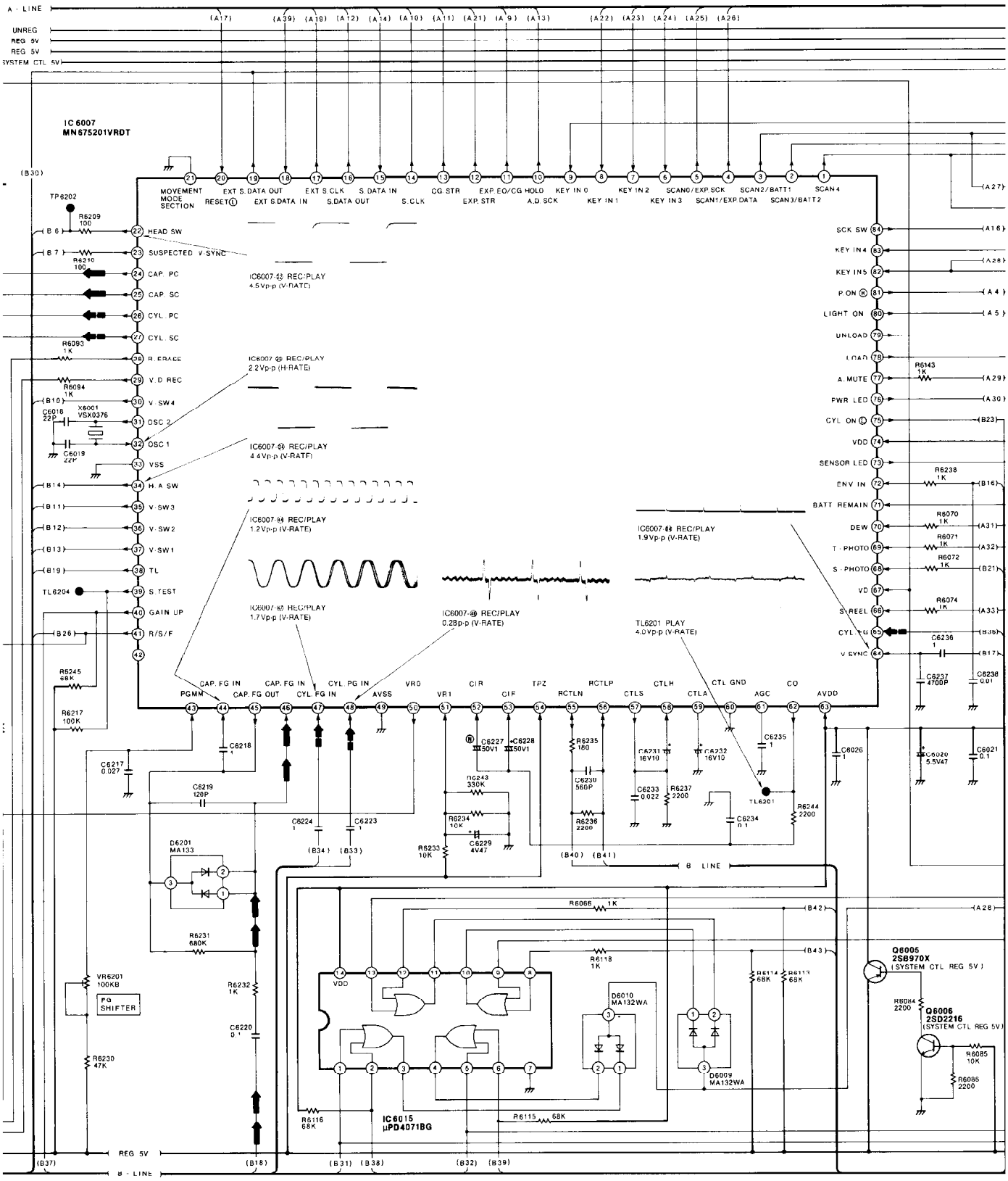
REF. NO.	Q6001			Q6003			Q6004			Q6005			Q6006			Q6010		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.1	4.8	4.8	−0.5	4.5	0	0	6.5	−0.1	4.8	4.8	4.1	−0.1	0	0.6	−0.1	2.9	0.1
PLAY	0	4.8	0	0	4.6	0	0	6.6	0	4.8	4.8	4.1	0	0	0.6	0	2.9	0.2
F.F.	4.1	4.8	4.8	−0.1	4.6	0	1.1	6.2	1.0	4.8	4.8	4.1	−0.1	0	0.6	−0.1	2.9	0.1
REF. NO.	QR6001						QR6002			QR6003			QR6004			QR6005		
MODE	1	2	3	4	5		E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.8	4.8	1.2	0.7	−0.1		−0.1	−0.1	0.6	4.8	−0.1	4.8	−0.1	0	1.7	−0.1	−0.1	6.8
PLAY	4.9	4.9	1.3	0.7	0		0	0	0.8	4.8	0	4.8	0	0	1.7	0	0	6.9
F.F.	4.8	4.8	1.3	0.7	−0.1		−0.1	−0.1	0.6	4.8	1.0	3.8	−0.1	0	1.7	0	−0.1	6.7
REF. NO.	QR6006						QR6008			QR6009			QR6010					
MODE	1	2	3	4	5		E	C	B	E	C	B	E	C	B			
STOP	−0.1	−0.1	−0.1	−0.1	−0.1		−0.1	3.0	1.8	4.8	0	4.8	4.8	0	4.8			
PLAY	0	0	0	0	0		0	2.9	1.8	4.8	2.4	3.6	4.8	0	4.8			
F.F.	−0.1	−0.1	−0.1	−0.1	−0.1		−0.1	2.9	1.8	4.8	2.4	3.8	4.8	0	4.8			
REF. NO.	QR6011						QR6012			QR6013			QR6014					
MODE	1	2	3	4	5		E	C	B	E	C	B	E	C	B			
STOP	4.7	4.7	−0.1	−0.1	0		−0.1	3.0	0.5	3.3	−0.1	4.7	1.3	−0.1	0.7			
PLAY	0	0	0	0	0		0	3.0	0.6	3.4	0	4.6	0	0	0.7			
F.F.	4.7	4.7	−0.1	−0.1	0		−0.1	3.0	0.5	3.2	−0.1	4.7	1.4	−0.1	0.7			

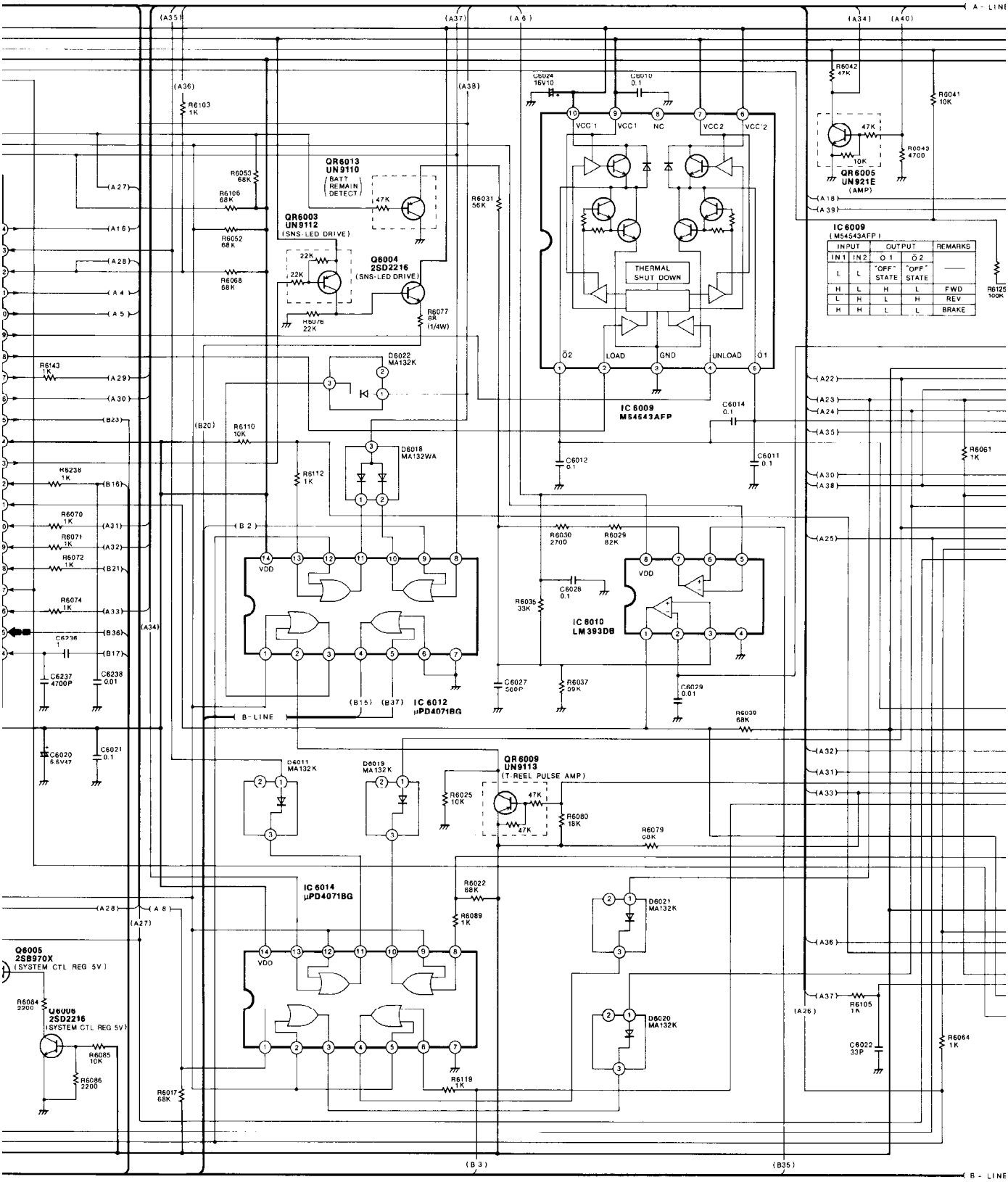
3-21. SYSTEM CONTROL & SERVO SCHEMATIC DIAGRAM



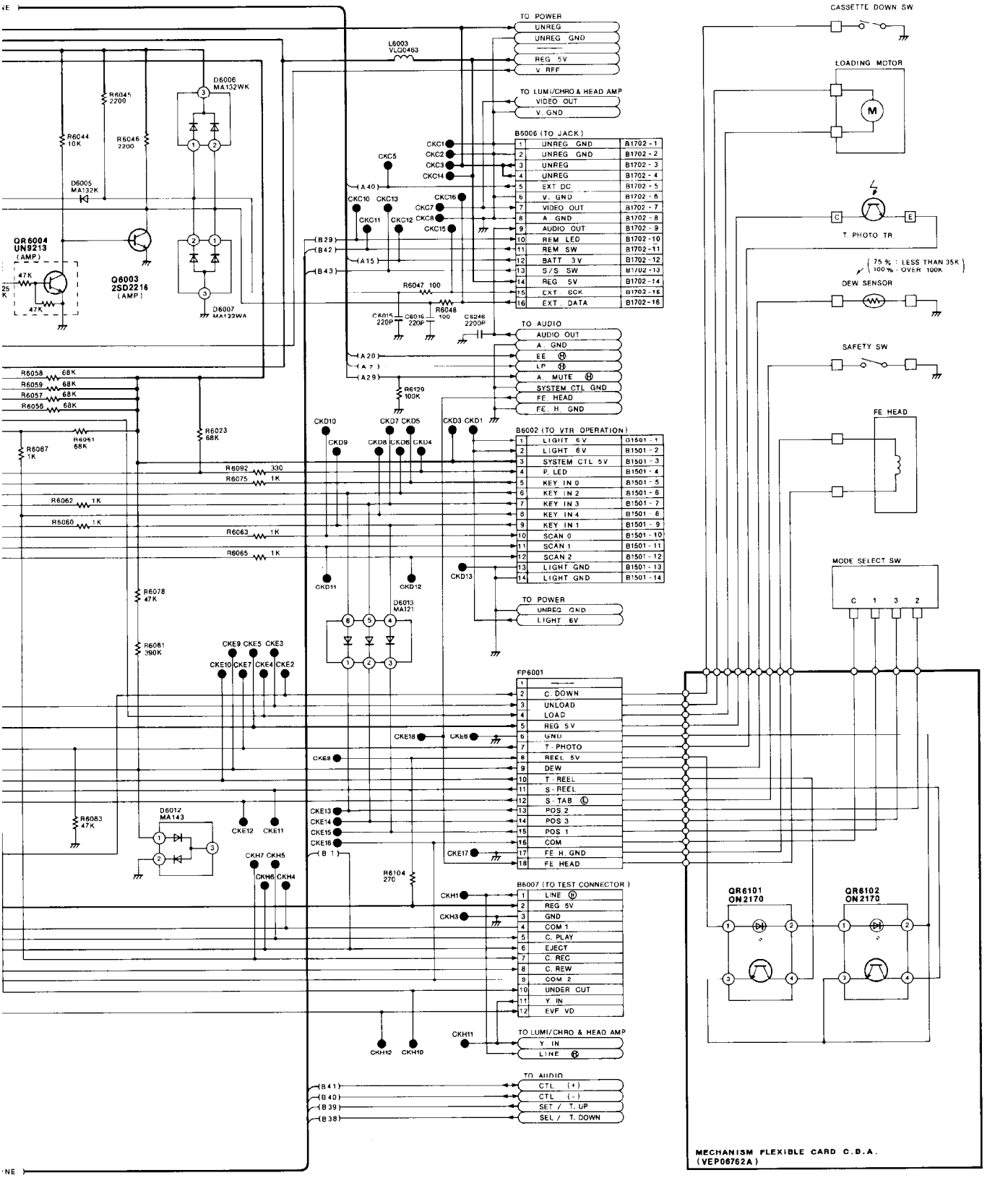

IC 6006
μPD6145G623A
HOLD
H SYNC
V SYNC
BLK
TEST
NRD
R DATA
NP
CS
CLK
STR
DATA
VCC
OSC
OSC
GND
QR6002
UN9217
(BLK SW)
22K
TL6001
DSP DATA
IC6006-⑰ REC/PLAY
4.6Vp-p (V-RATE)
IC6006-⑱ REC/PLAY
4.6Vp-p (H-RATE)
IC 6007
MN675201VRDT
TP6202
IC 6008
S3500A3
VDD
T2
DATA
OE
CLK
S2
ST
T1
1 Hz
F2
F1
X IN
X OUT
VSS
X6002
VSX0439
D6004
MA132K
D6015
MA133
QR6012
UN9210
(AMP)
47K
QR6006
XN1213
(INVERTER)
IC6006-⑨ REC/PLAY
1.9Vp-p (H-RATE)
IC6008-⑨ REC/PLAY
0.9Vp-p (V-RATE)
A - LINE
UNREG
REG 8V
REG 5V
SYSTEM CTL 5V
B - LINE
REG 5V
Q6001
2SD2216
(EE ON)
D6023
MA132WK
RESET
IC 6013
PST572C
D6008
MA132WK
IC 6201
LM2902V
D6202
MA133
Q6010
2SD2216
(AMP)
VR6201
100KB
PG SHIFTER
SCR
GND
VDD

■ CYLINDER SERVO SPEED LOOP ◀■ CYLINDER SERVO PHASE LOOP





16	17	18	19	20	21

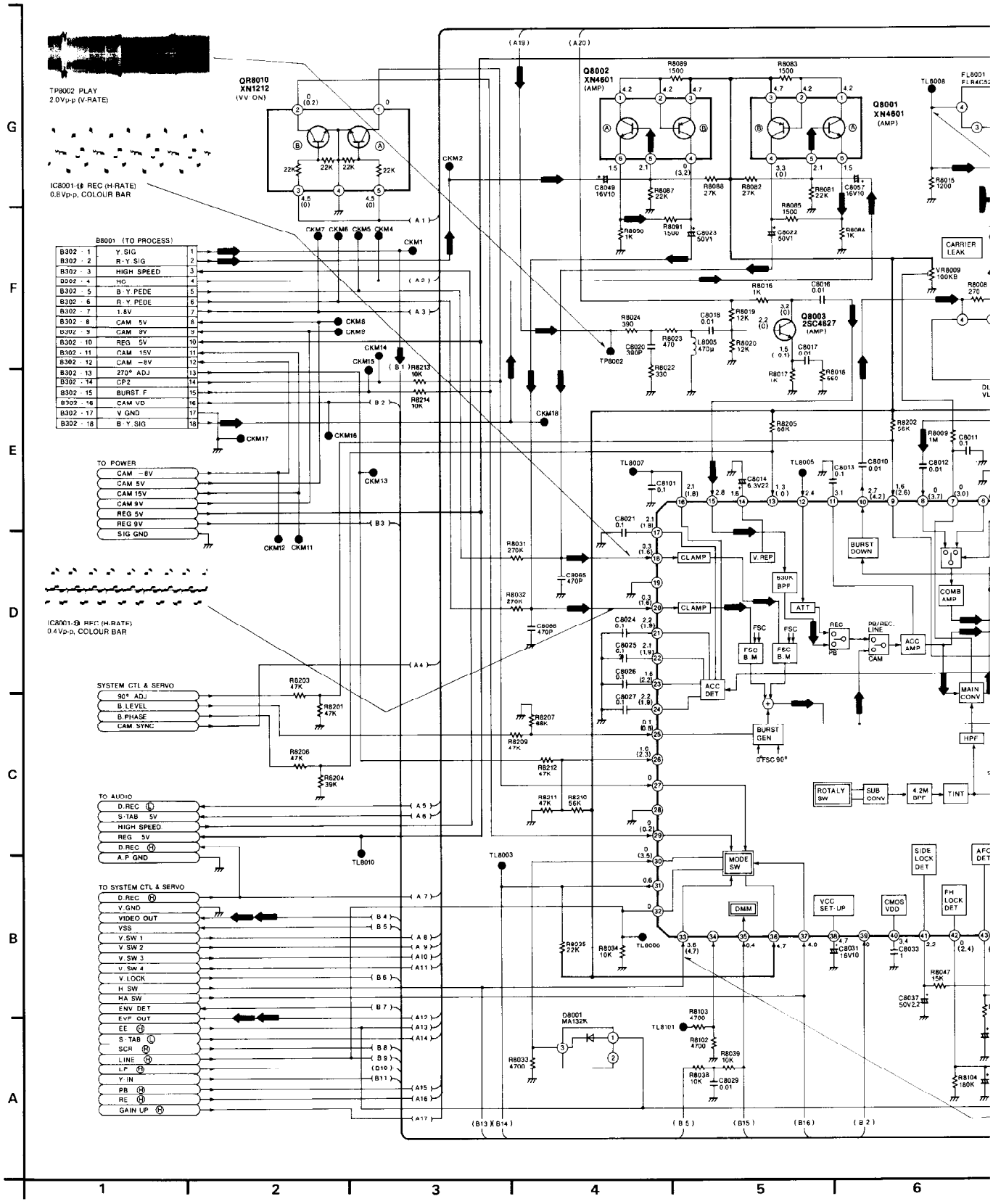


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

22 | 23 | 24 | 25 | 26 | 27

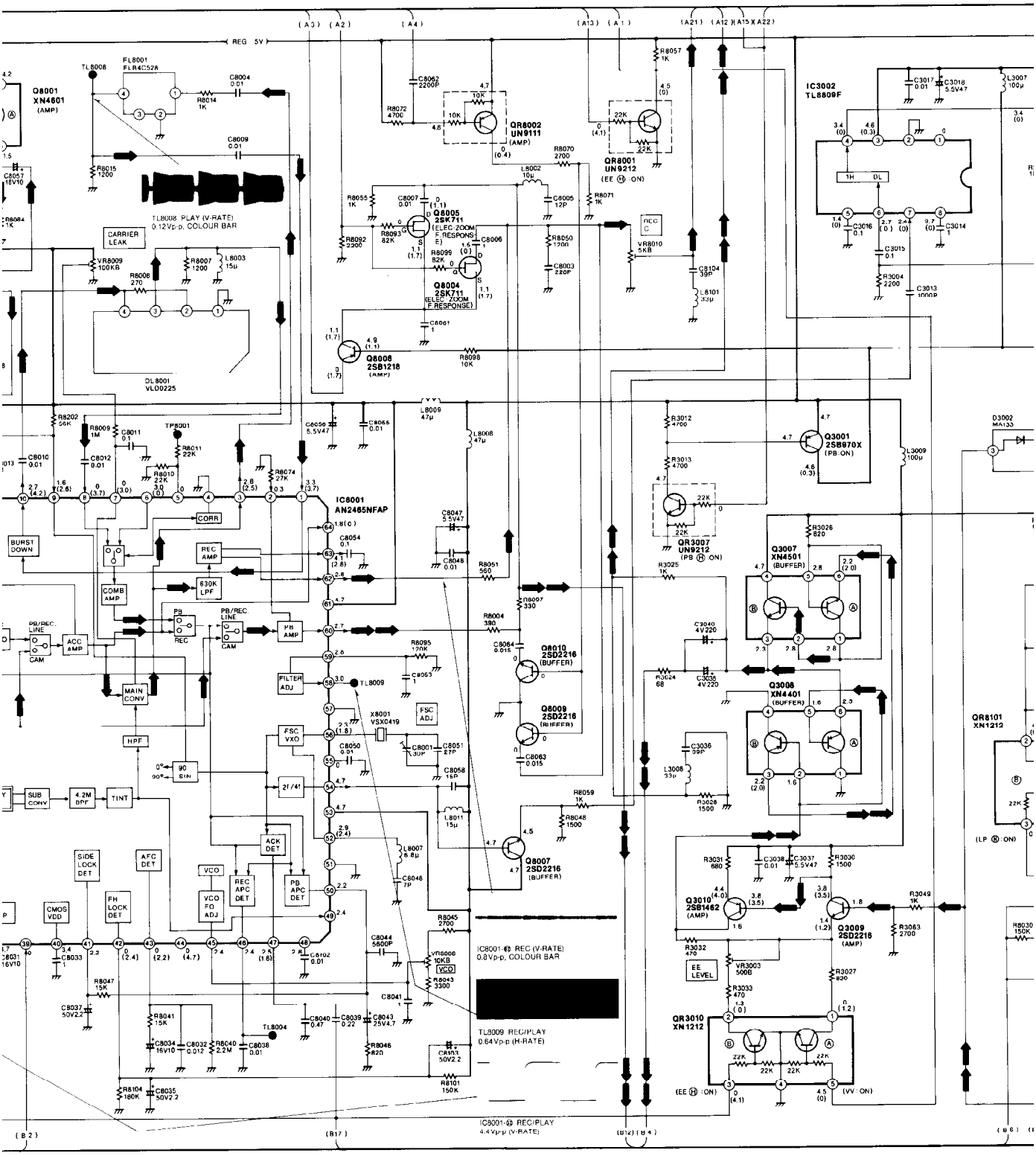
Next Page:
LUMI/CHRO & HEAD AMP Section

3-22. LUMINANCE/CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM

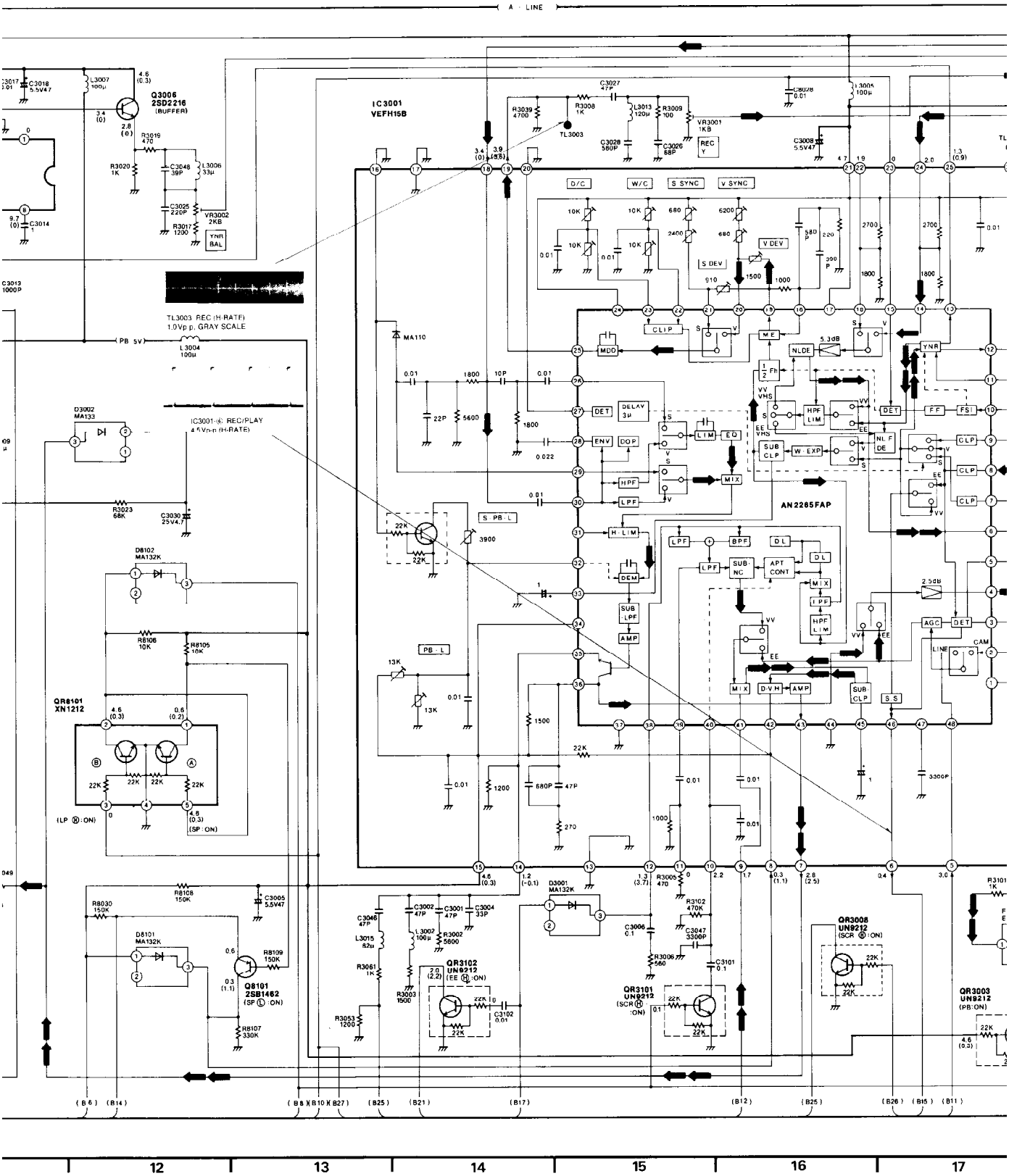


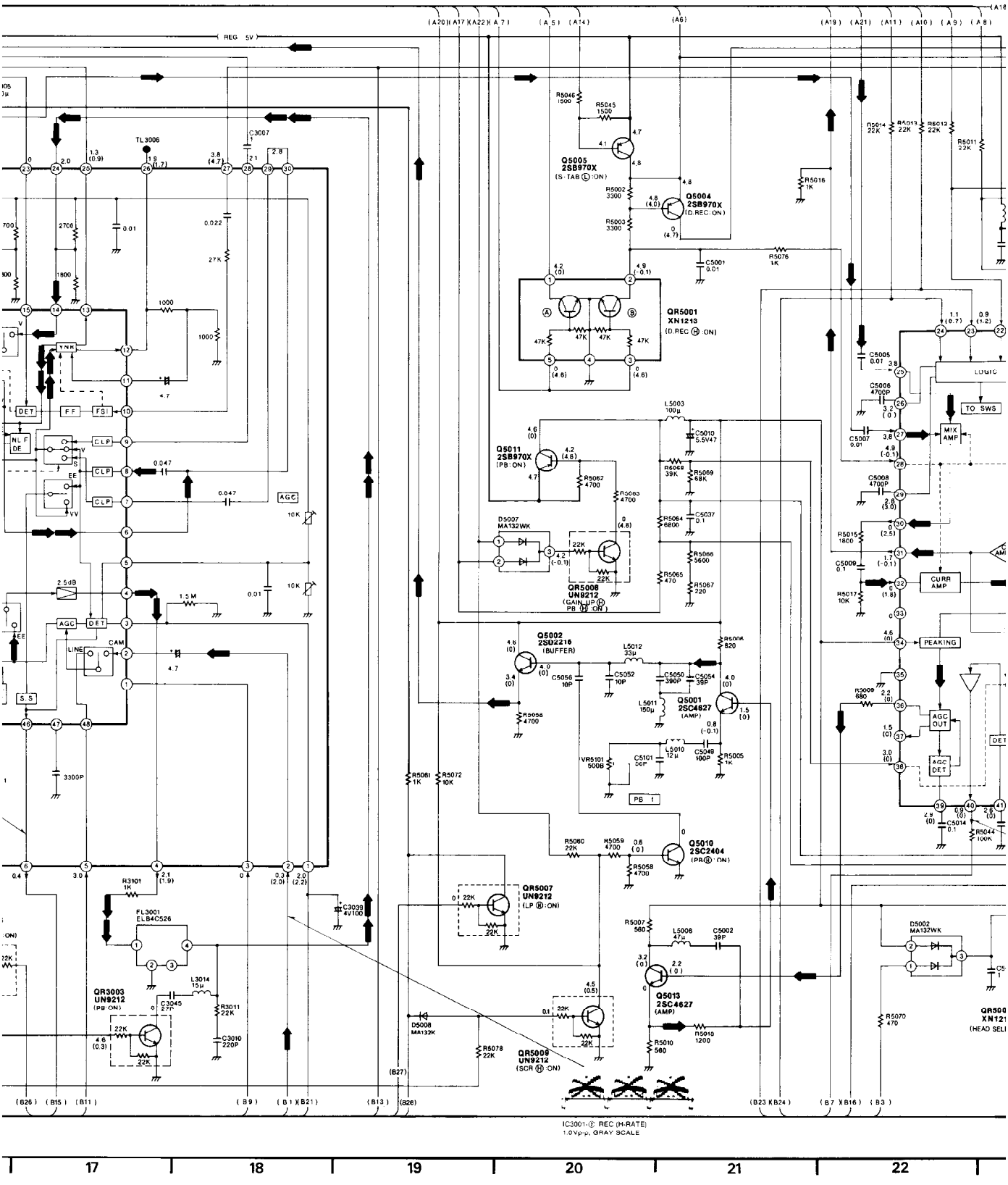
DIAGRAM

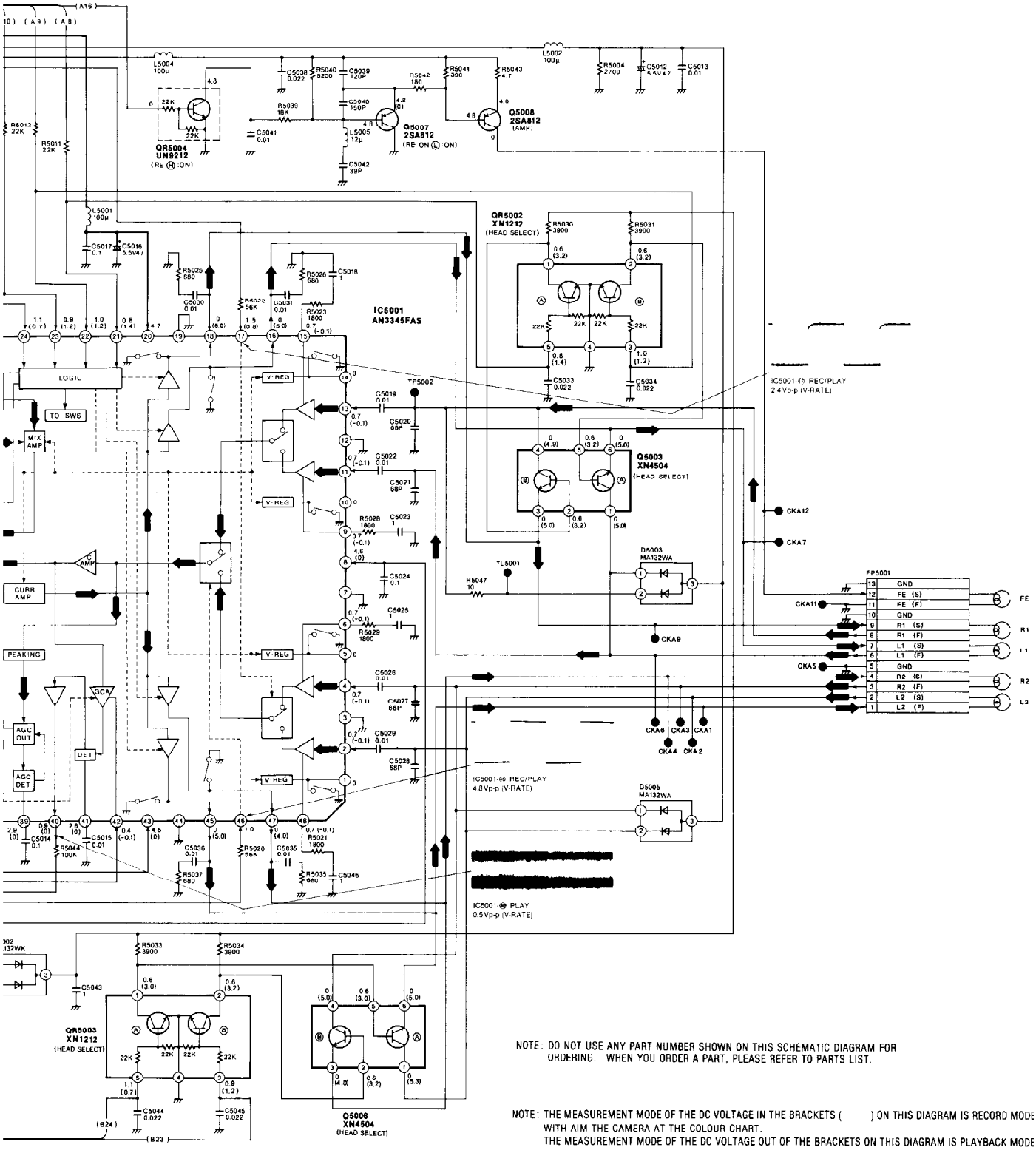
MAIN SIGNAL PATH IN REC MODE MAIN SIGNAL PATH IN PLAY



'H IN PLAYBACK MODE



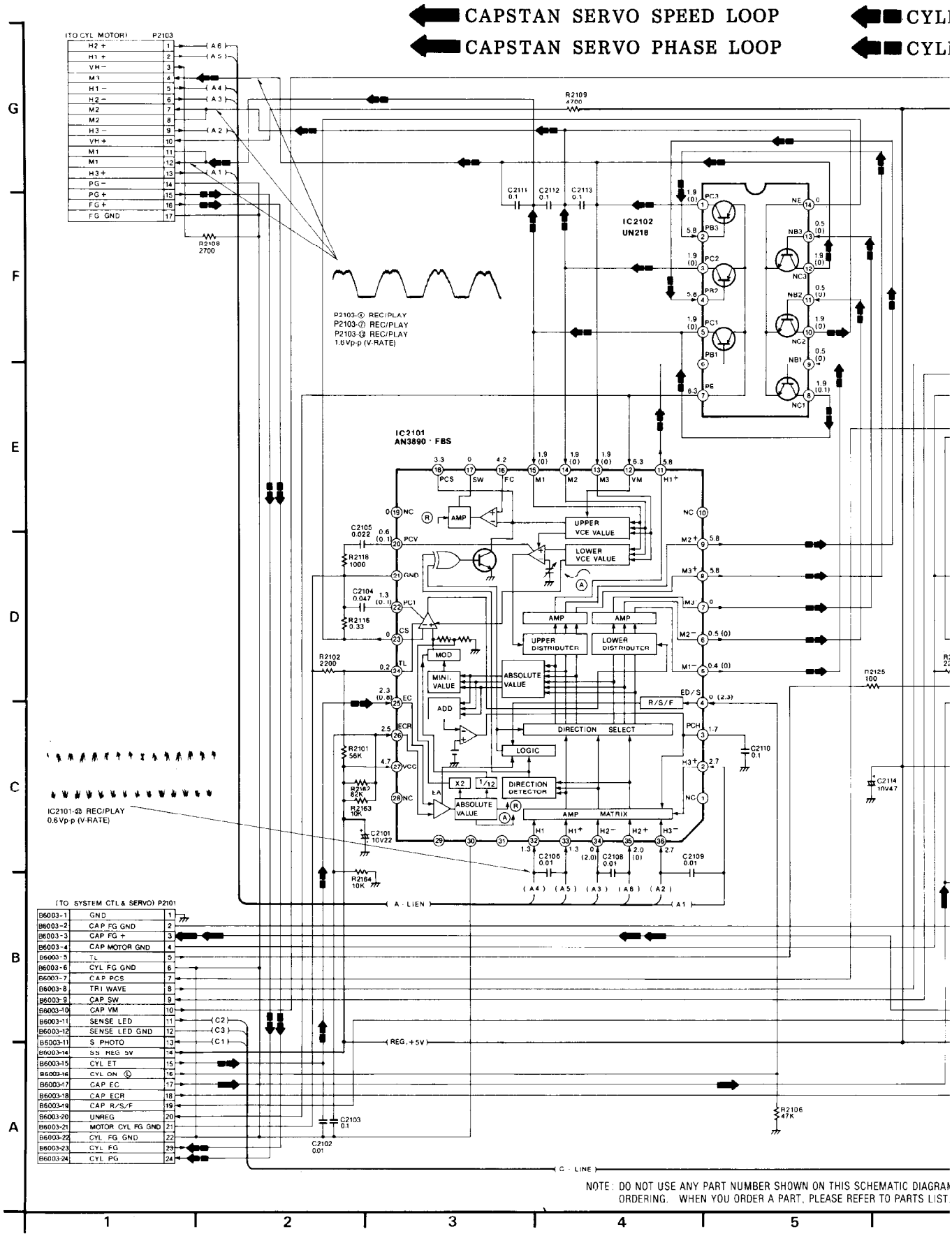

REG 5V
TL3006
C3007
Q5005
2SB970X
(S-TAB L:ON)
Q5004
2SB970X
(D.REC:ON)
QR5001
XN1213
(D.REC H:ON)
Q5011
2SB970X
(PB:ON)
D5007
MA132WK
QR5008
UN9212
(GAIN UP H
PB H:ON)
Q5002
2SD2216
(BUFFER)
Q5001
2SC4827
(AMP)
Q5010
2SC2404
(PB R:ON)
QR5007
UN9212
(LP R:ON)
QR5009
UN9212
(SCR H:ON)
Q5013
2SC4627
(AMP)
QR3003
UN9212
(PB:ON)
FL3001
ELB4C526
D5008
MA132WK
D5002
MA132WK
DET
FF
FSI
CLP
AGC
DET
LINE
CAM
S.S
EE
NLF
DE
YNK
LOGIC
TO SWS
MIX AMP
CURR AMP
PEAKING
AGC OUT
AGC DET
PB 1
IC3001-② REC (H-RATE)
1.0Vp-p, GRAY SCALE
17
18
19
20
21
22



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

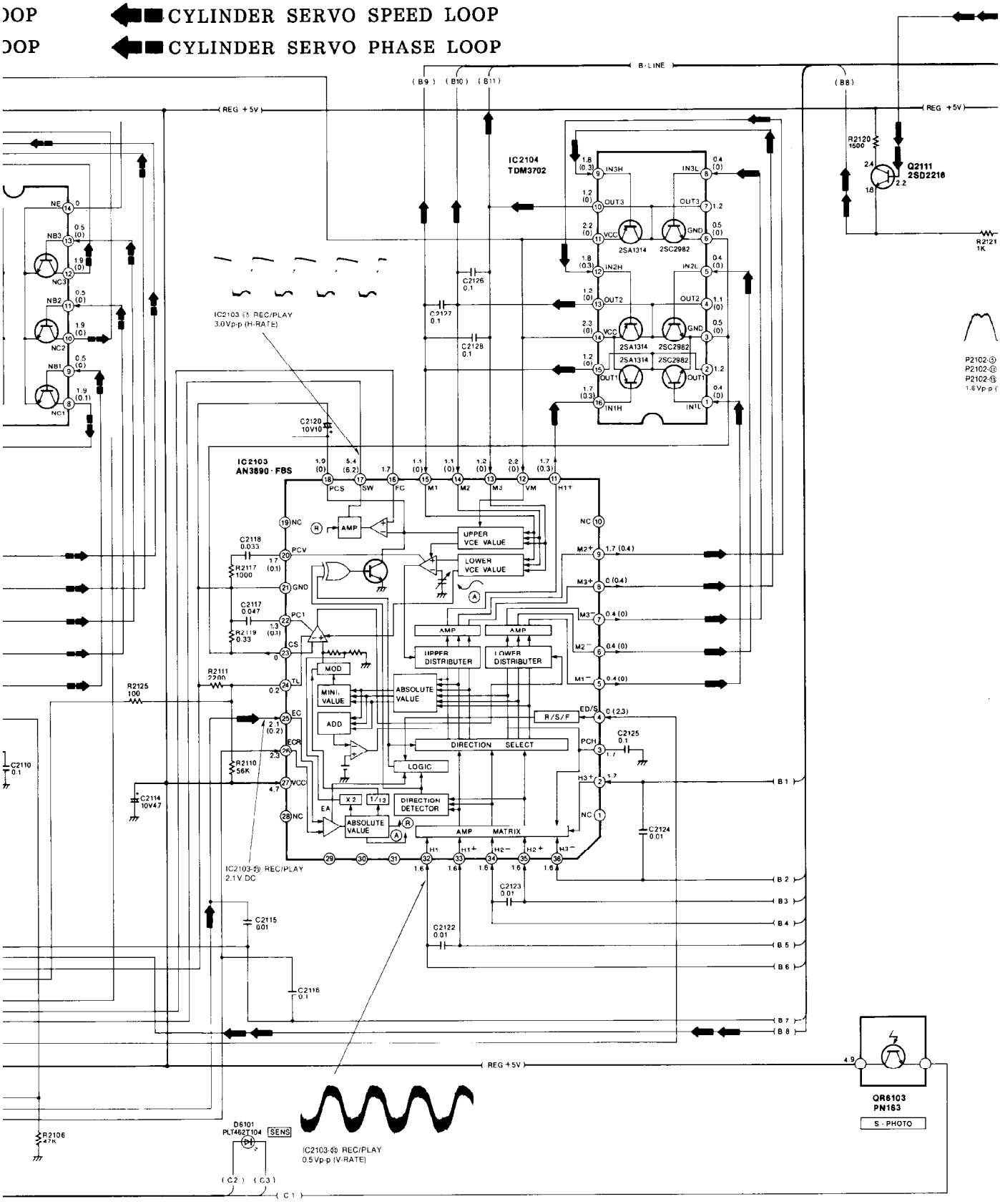
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

3-24. DRIVE SCHEMATIC DIAGRAM



)OP ◀■■ CYLINDER SERVO SPEED LOOP

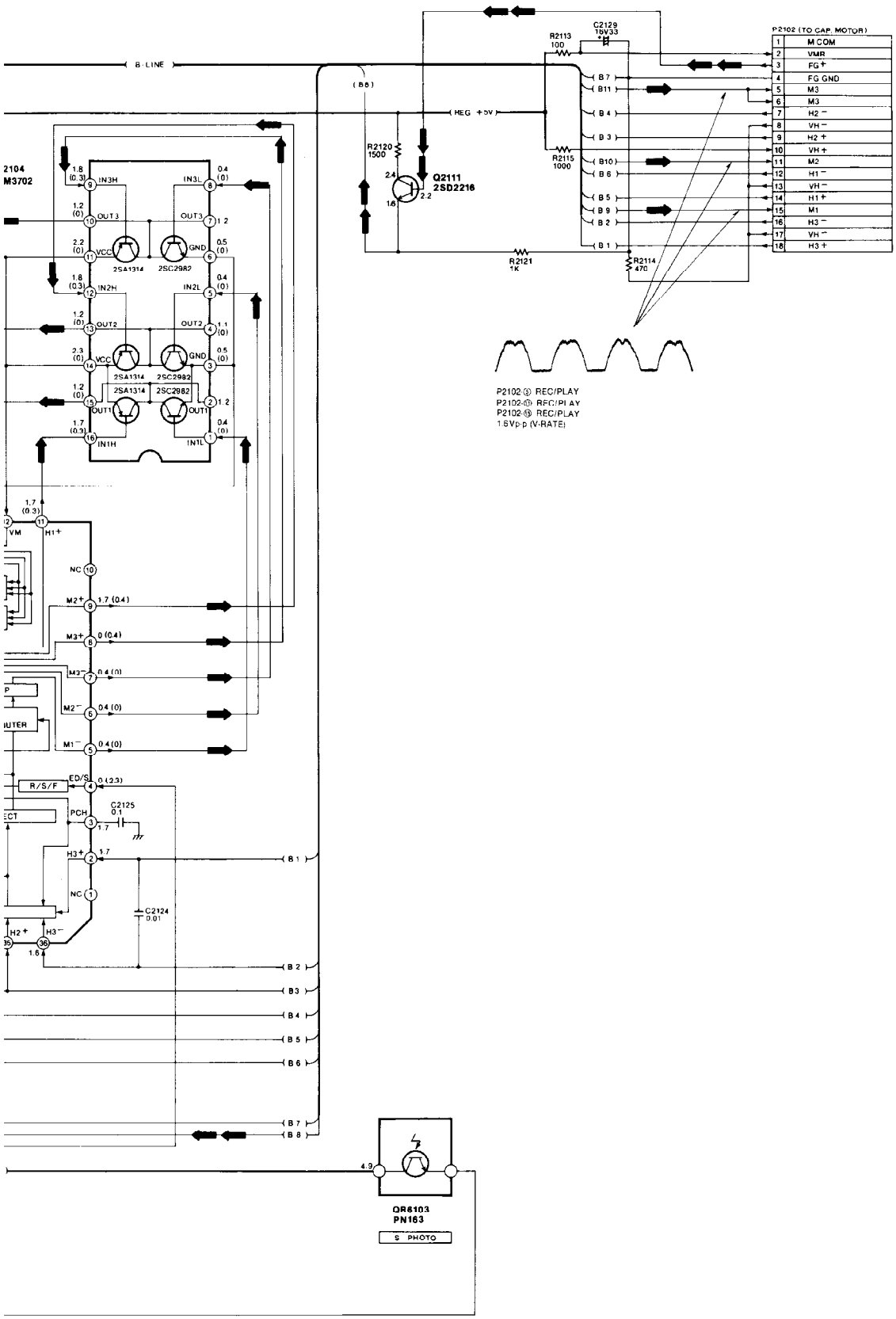
)OP ◀■■ CYLINDER SERVO PHASE LOOP



IMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
RDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.

5 | 6 | 7 | 8 | 9 | 10

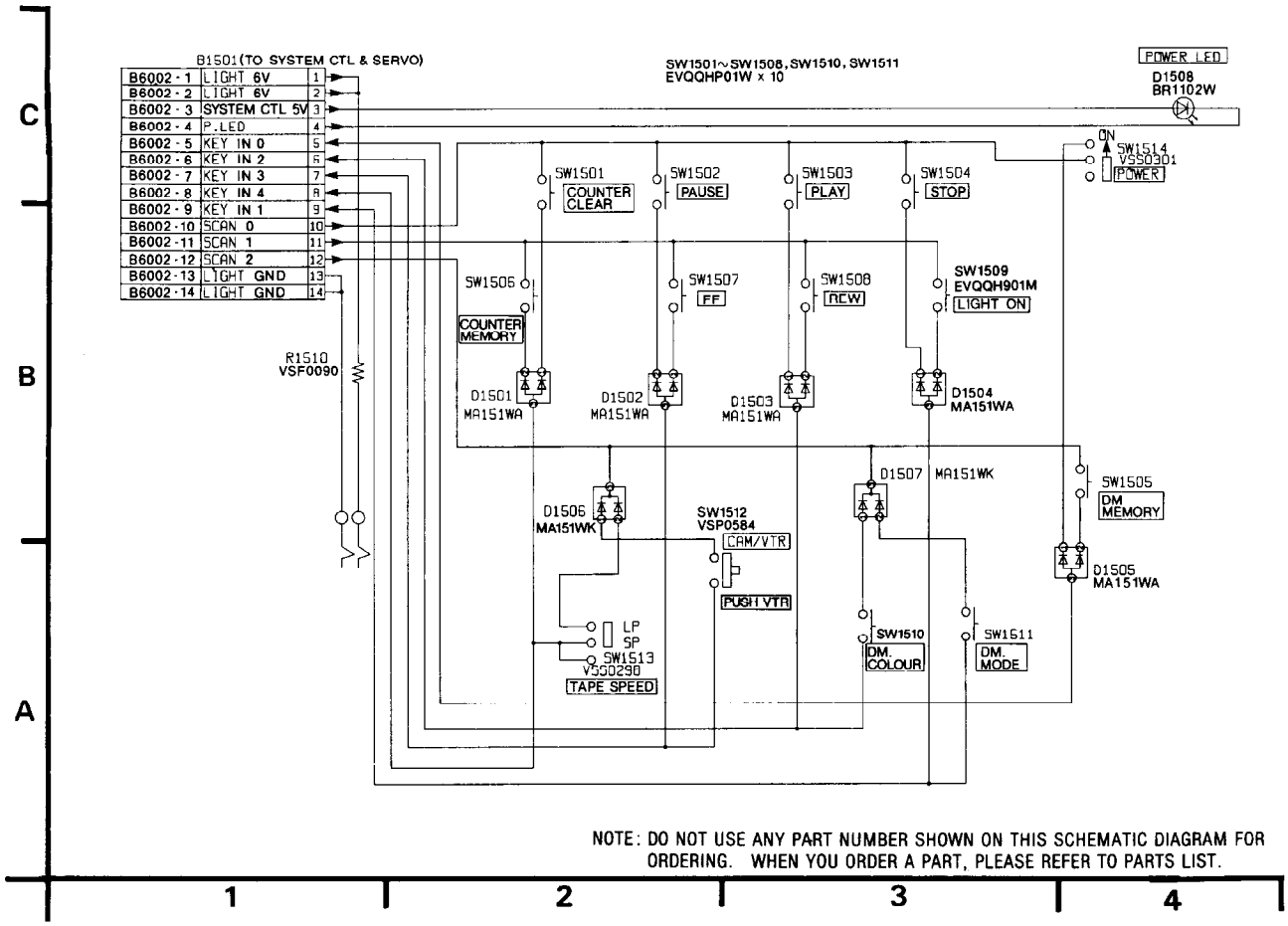


MENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE CAMERA AT THE COLOUR CHART.

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

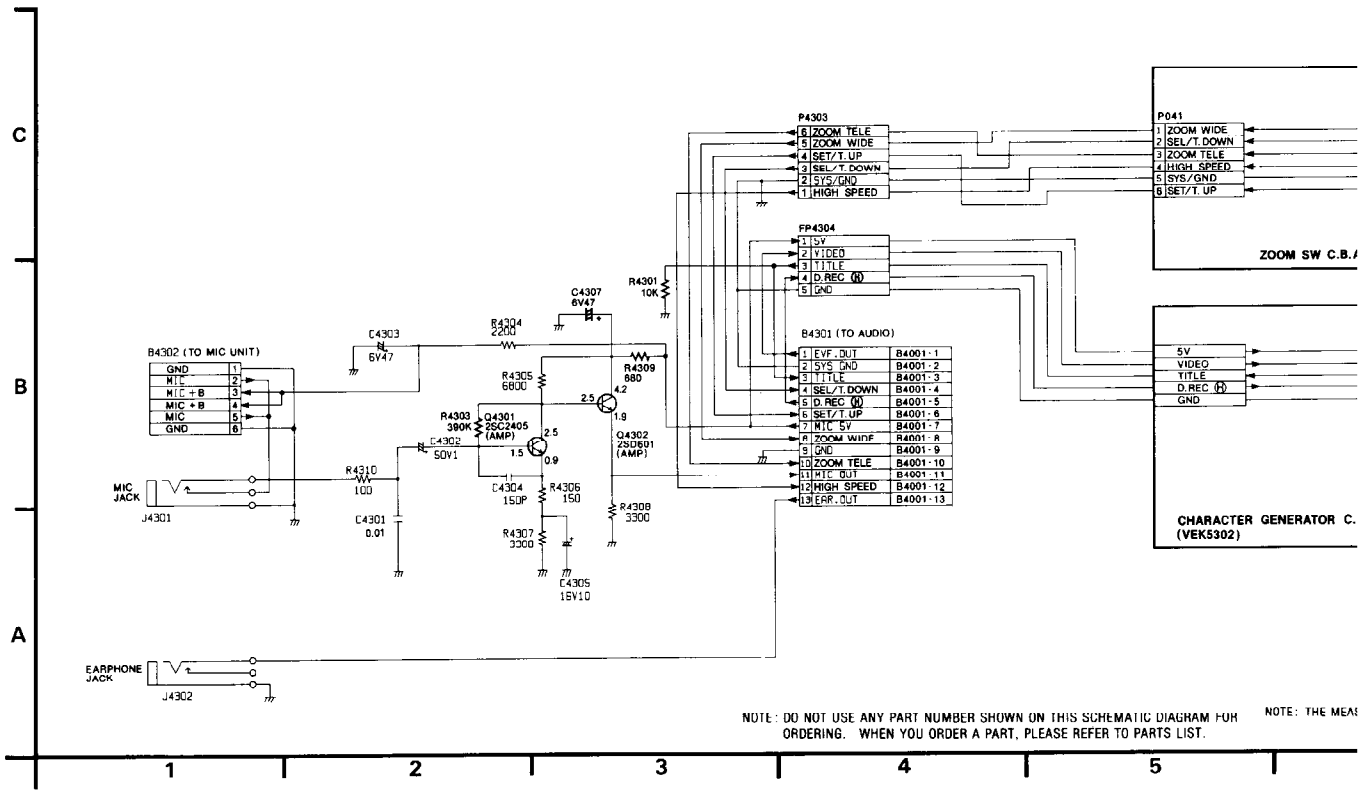
8 | 9 | 10 | 11 | 12

3-26. VTR OPERATION SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

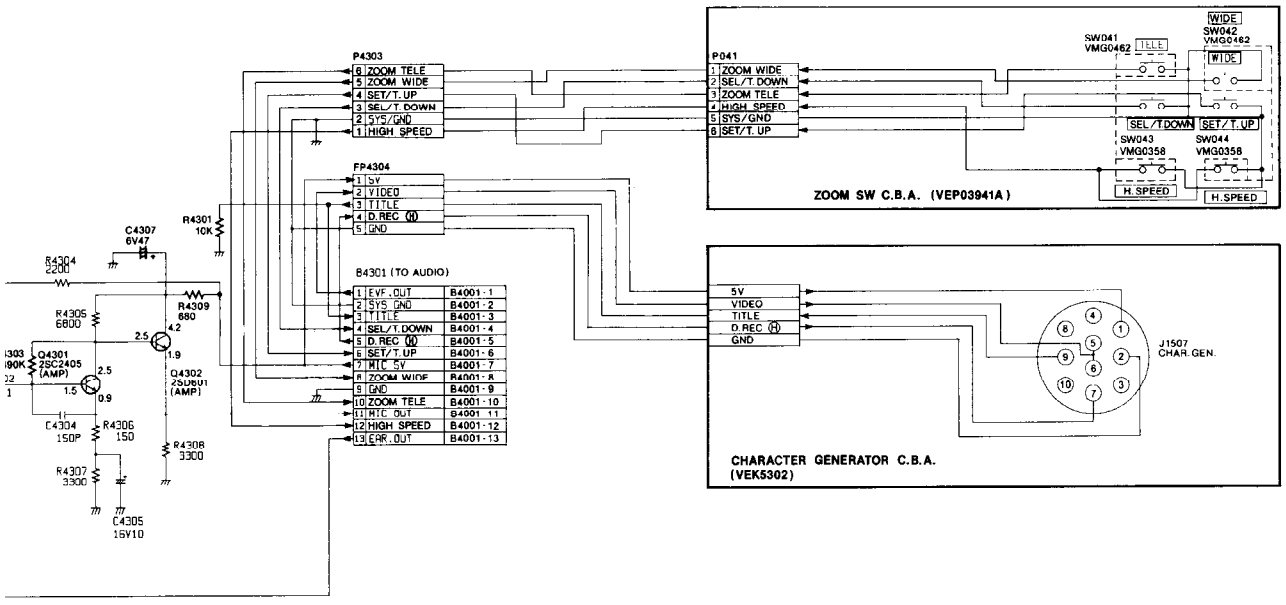
3-28. MIC INTERFACE SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM

MIC INTERFACE C.B.A.	
Transistor	
Q4301	C-2
Q4302	C-2
Connector	
B4301	D-2
B4302	C-1
FP4304	C-3
P041	D-3
P4303	D-3

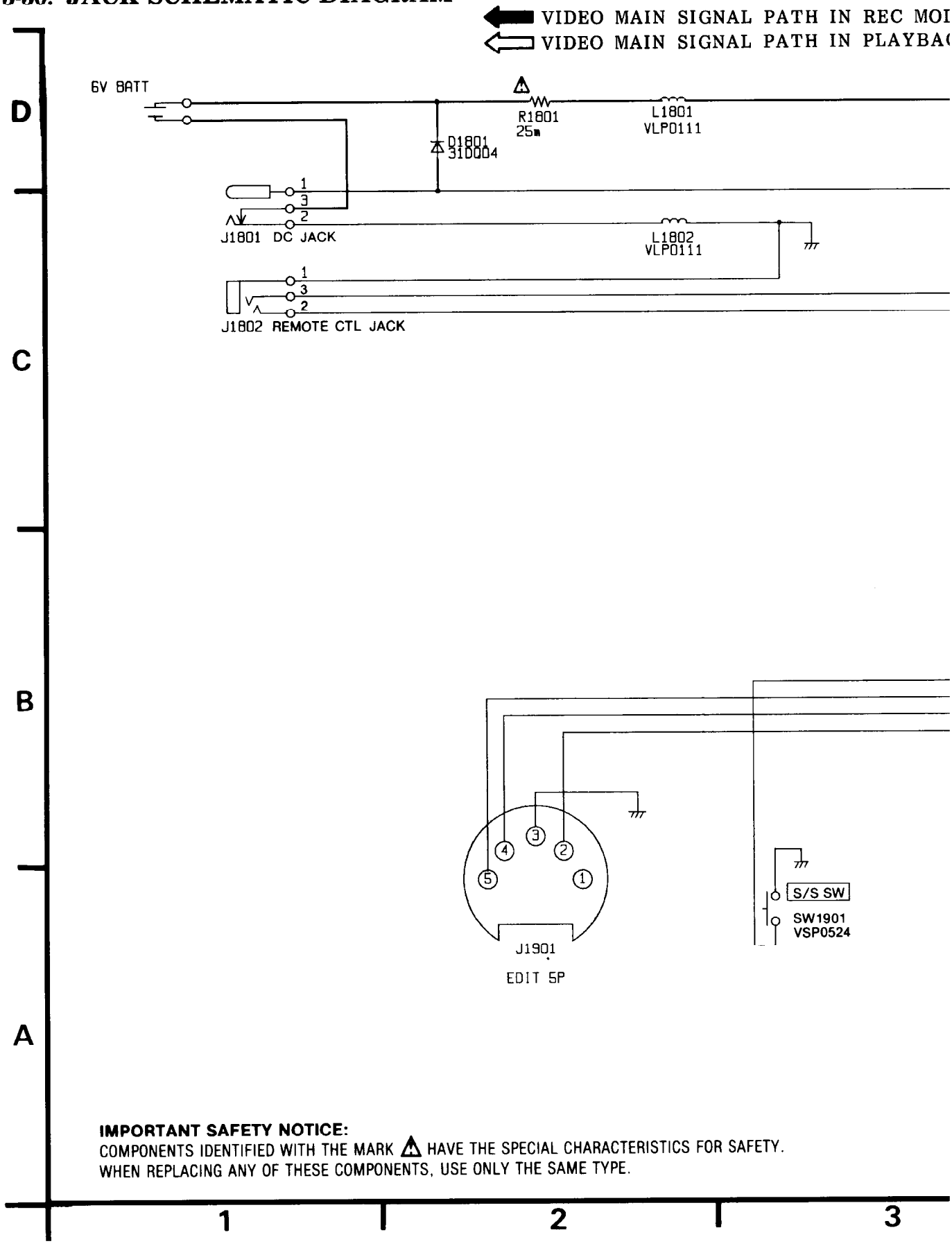
ADDRESS INFORMATION
Ⓒ ... COMPONENT SIDE
Ⓕ ... FOIL SIDE



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

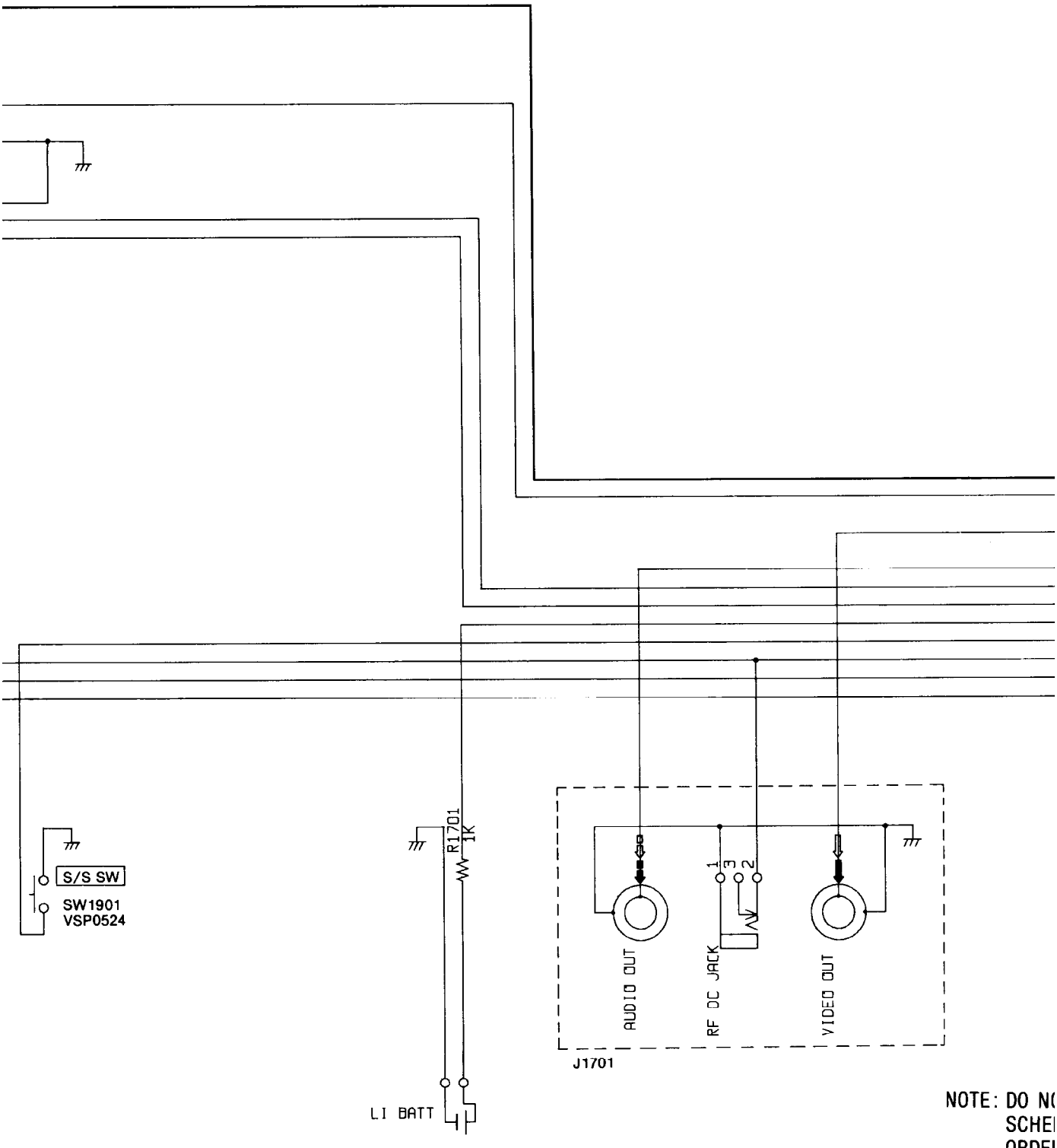
3-30. JACK SCHEMATIC DIAGRAM



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

.L PATH IN REC MODE
.L PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

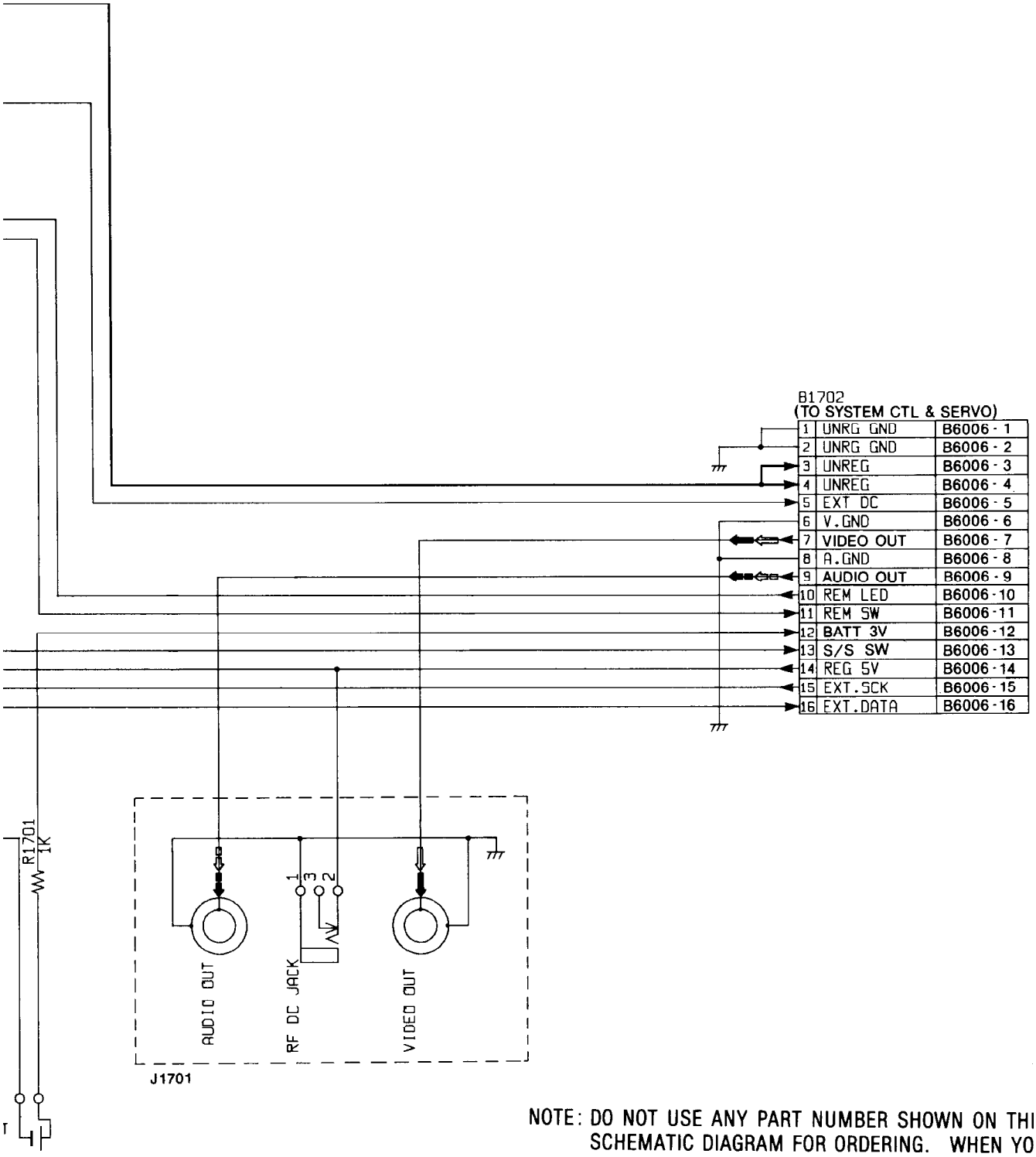


NOTE: DO N(
SCHE
ORDE

AFETY.

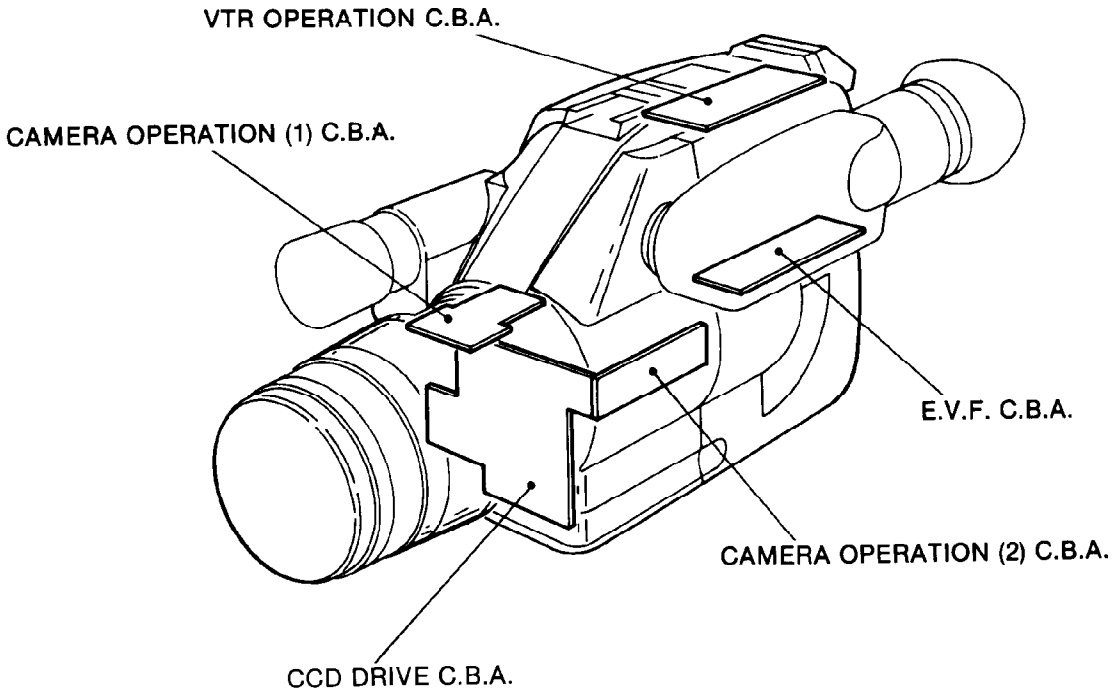
3 4 5

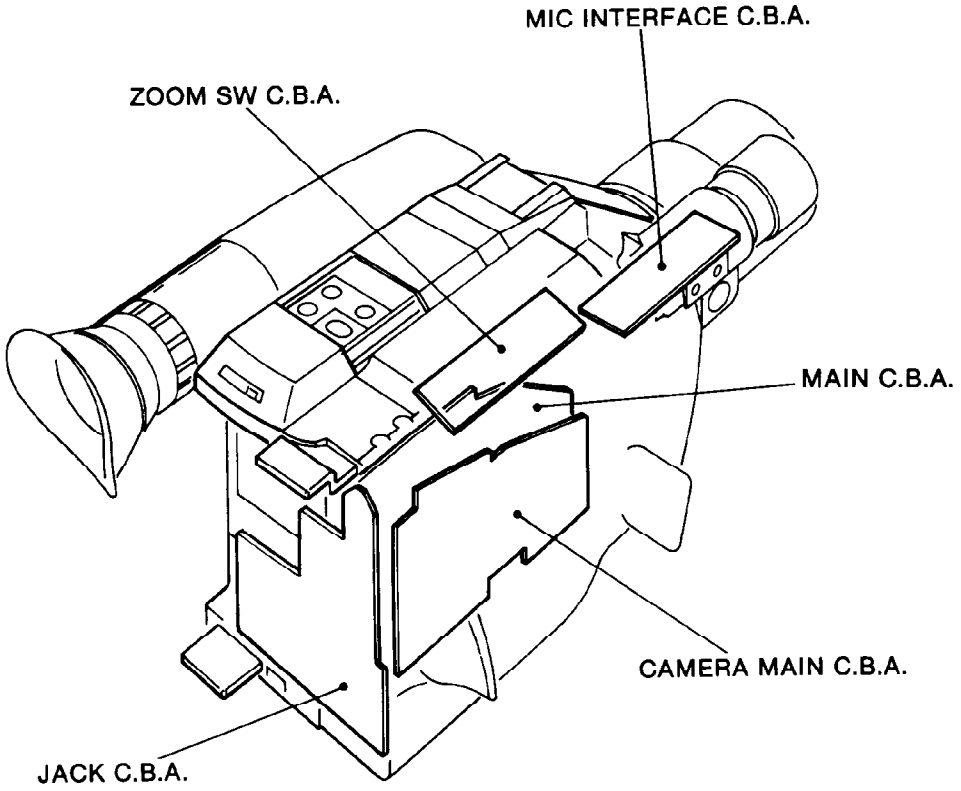
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE


B1702
(TO SYSTEM CTL & SERVO)
1 UNRG GND B6006 - 1
2 UNRG GND B6006 - 2
3 UNREG B6006 - 3
4 UNREG B6006 - 4
5 EXT DC B6006 - 5
6 V.GND B6006 - 6
7 VIDEO OUT B6006 - 7
8 A.GND B6006 - 8
9 AUDIO OUT B6006 - 9
10 REM LED B6006 - 10
11 REM SW B6006 - 11
12 BATT 3V B6006 - 12
13 S/S SW B6006 - 13
14 REG 5V B6006 - 14
15 EXT.SCK B6006 - 15
16 EXT.DATA B6006 - 16
R1701
1K
AUDIO OUT
RF DC JACK
VIDEO OUT
J1701

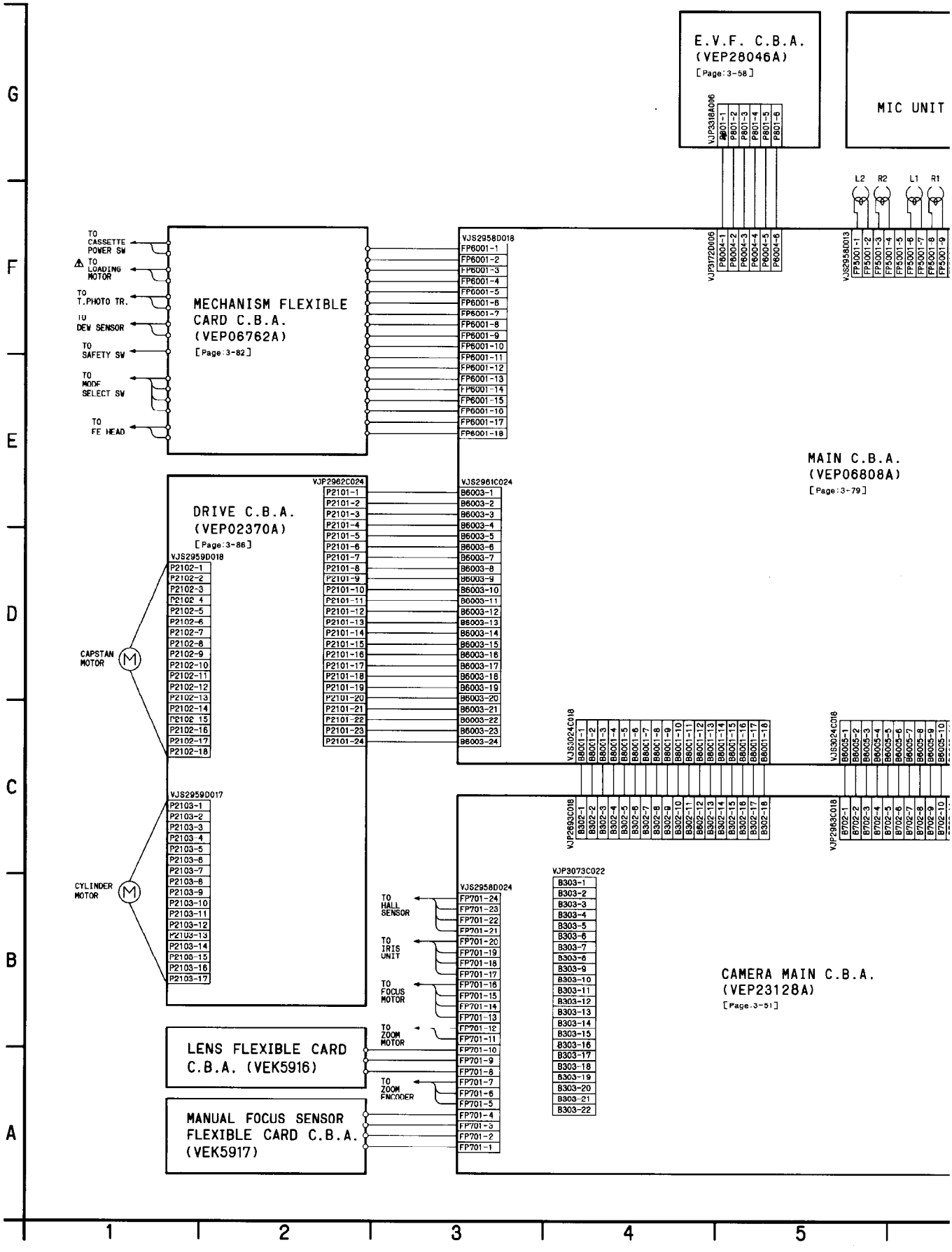
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

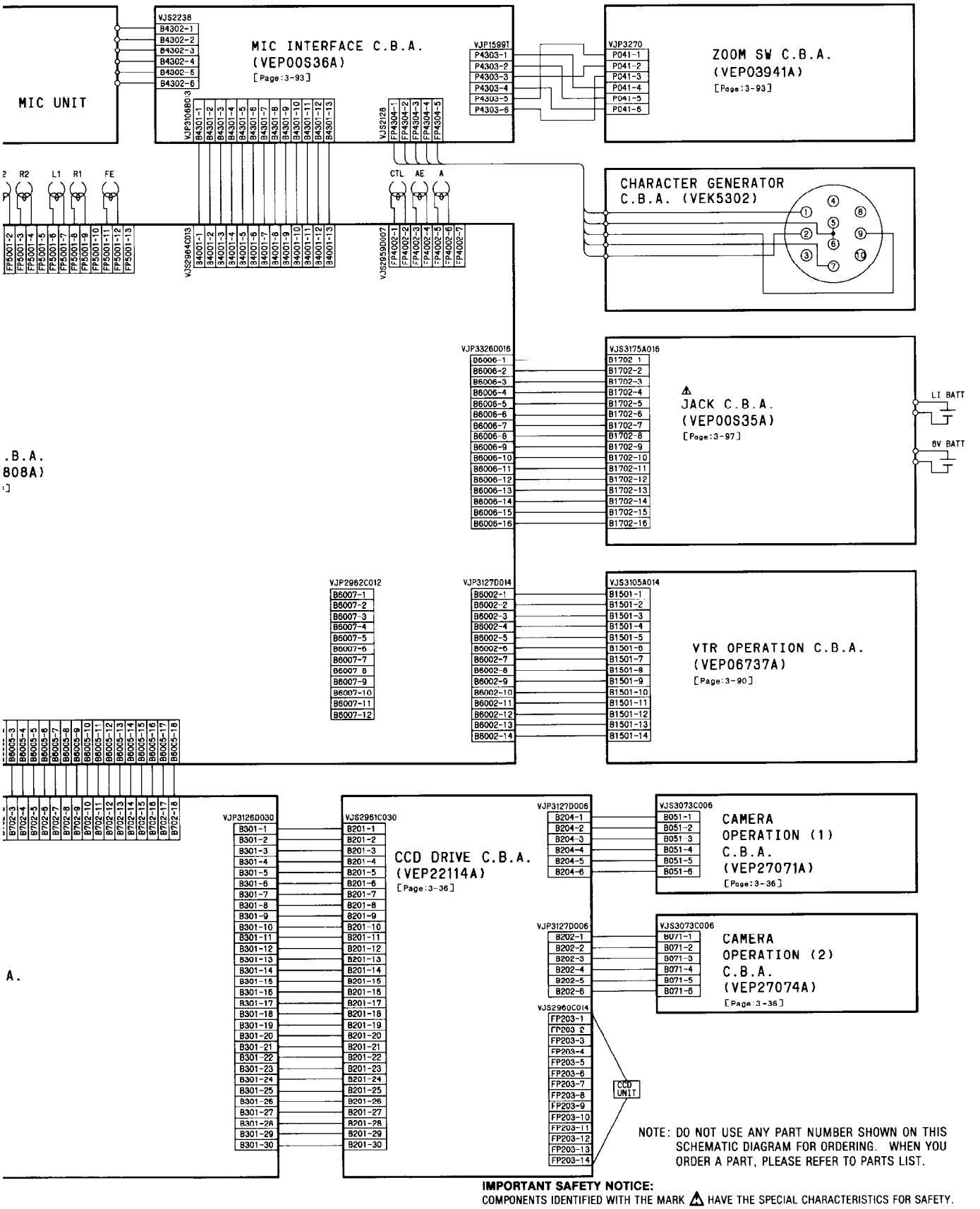
3-32. CIRCUIT BOARD LAYOUT





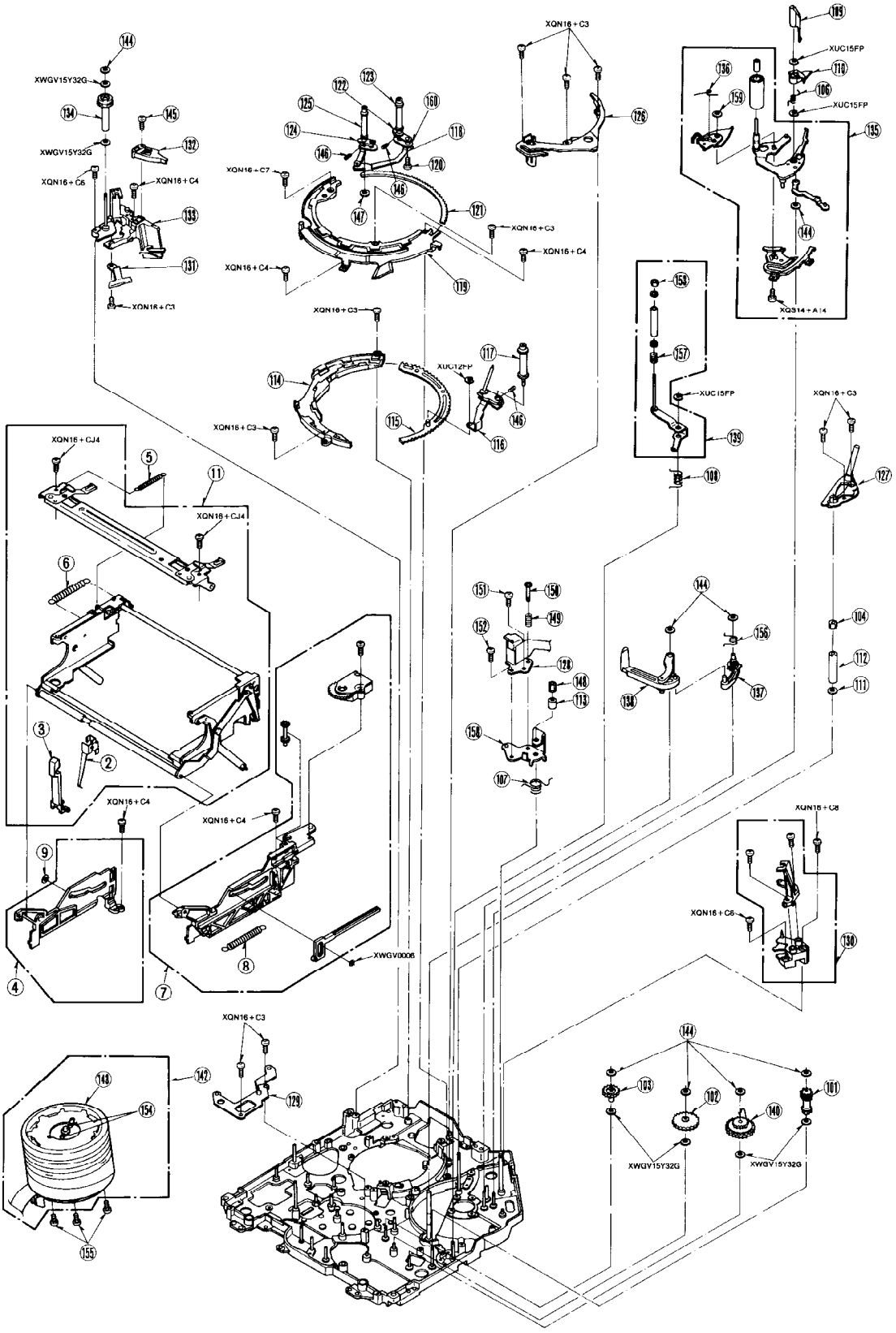
3-33. INTERCONNECTION SCHEMATIC DIAGRAM



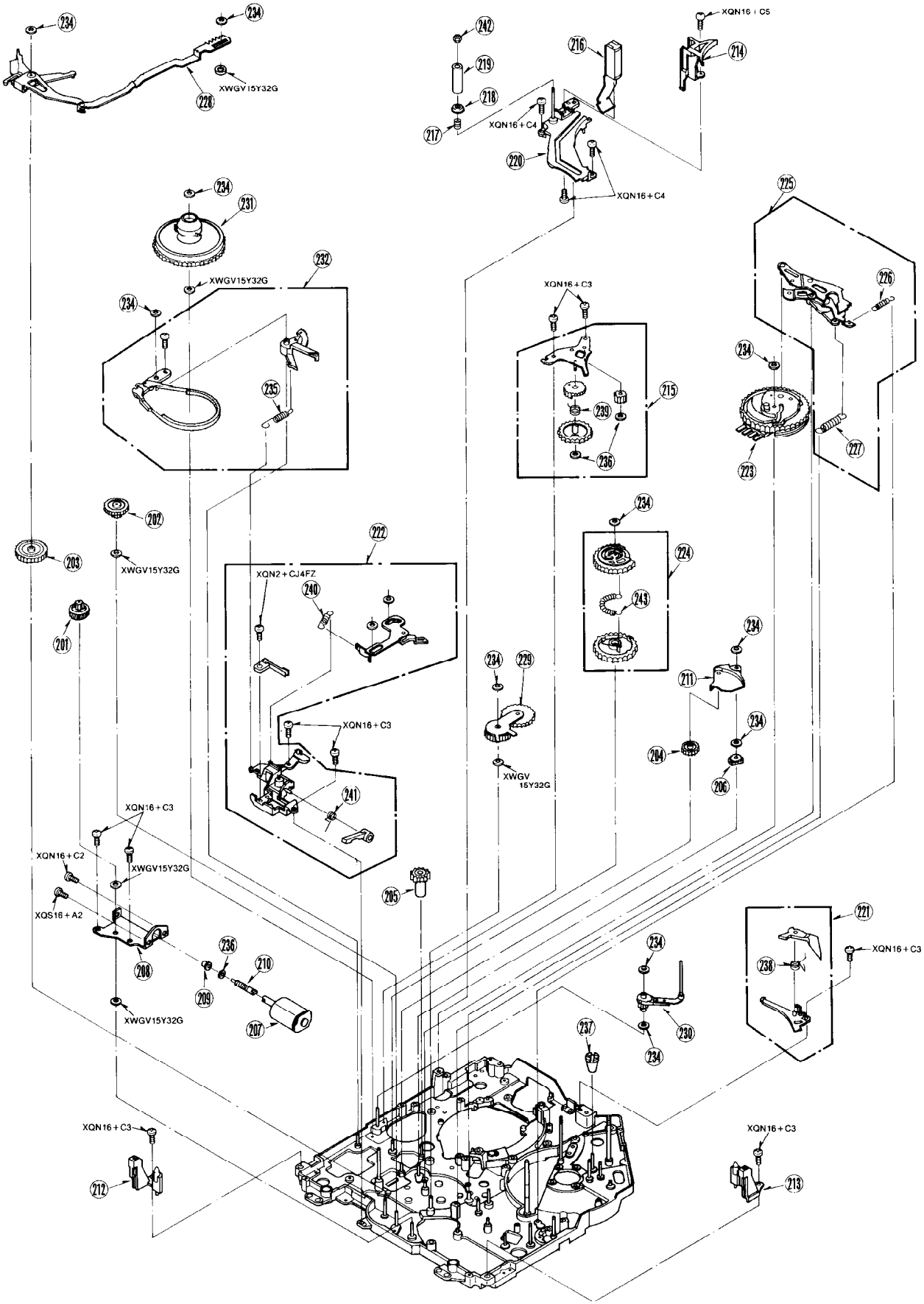

MIC UNIT
MIC INTERFACE C.B.A.
(VEP00S36A)
[Page:3-93]
ZOOM SW C.B.A.
(VEP03941A)
[Page:3-93]
CHARACTER GENERATOR
C.B.A. (VEK5302)
JACK C.B.A.
(VEP00S35A)
[Page:3-97]
LI BATT
6V BATT
VTR OPERATION C.B.A.
(VEP06737A)
[Page:3-90]
CCD DRIVE C.B.A.
(VEP22114A)
[Page:3-36]
CAMERA
OPERATION (1)
C.B.A.
(VEP27071A)
[Page:3-36]
CAMERA
OPERATION (2)
C.B.A.
(VEP27074A)
[Page:3-36]
CCD UNIT
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.
6
7
8
9
10

SECTION 4
EXPLODED VIEWS & PARTS LIST

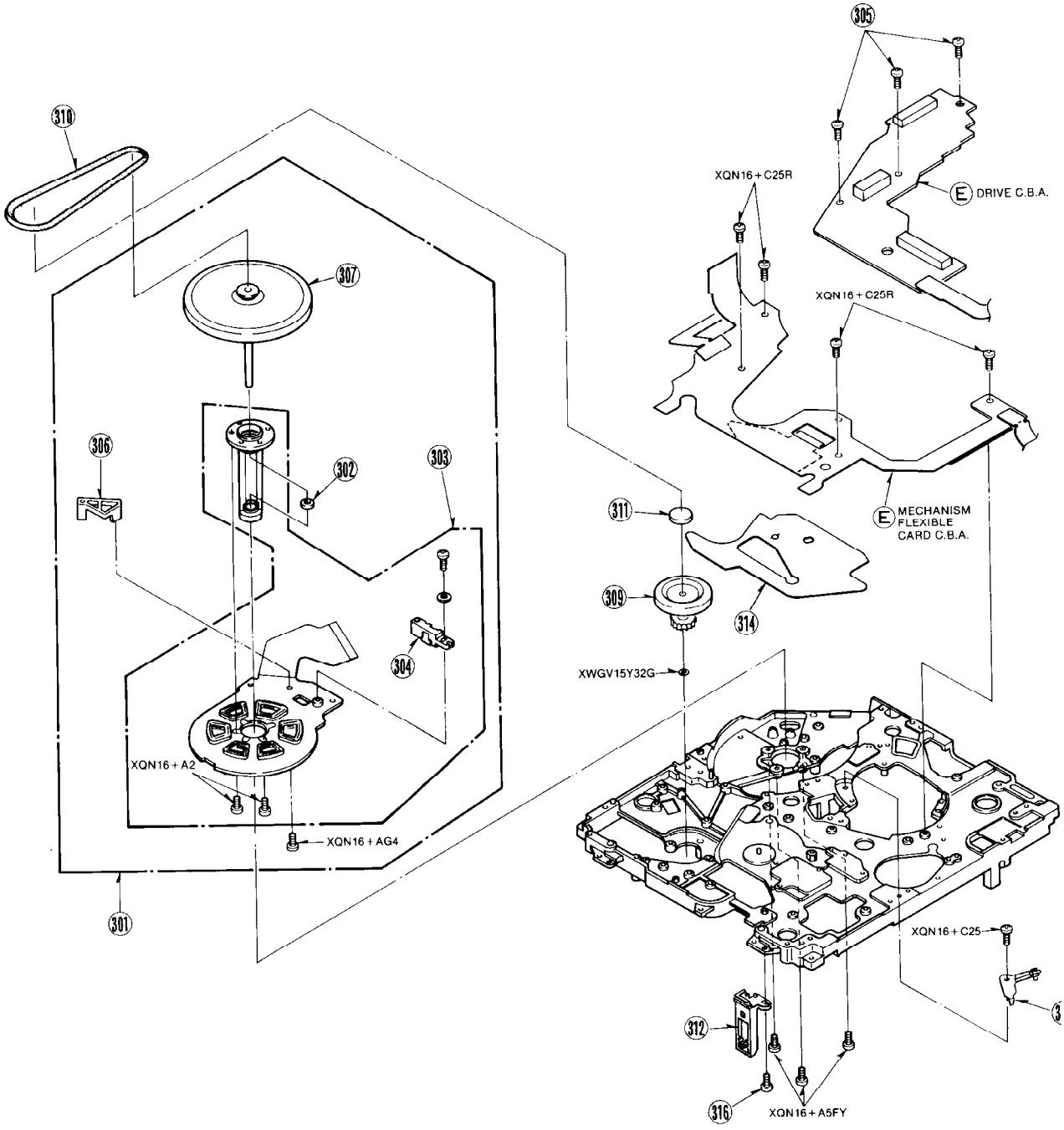
4-1. EXPLODED VIEWS ❶ VTR MECHANISM SECTION (1)



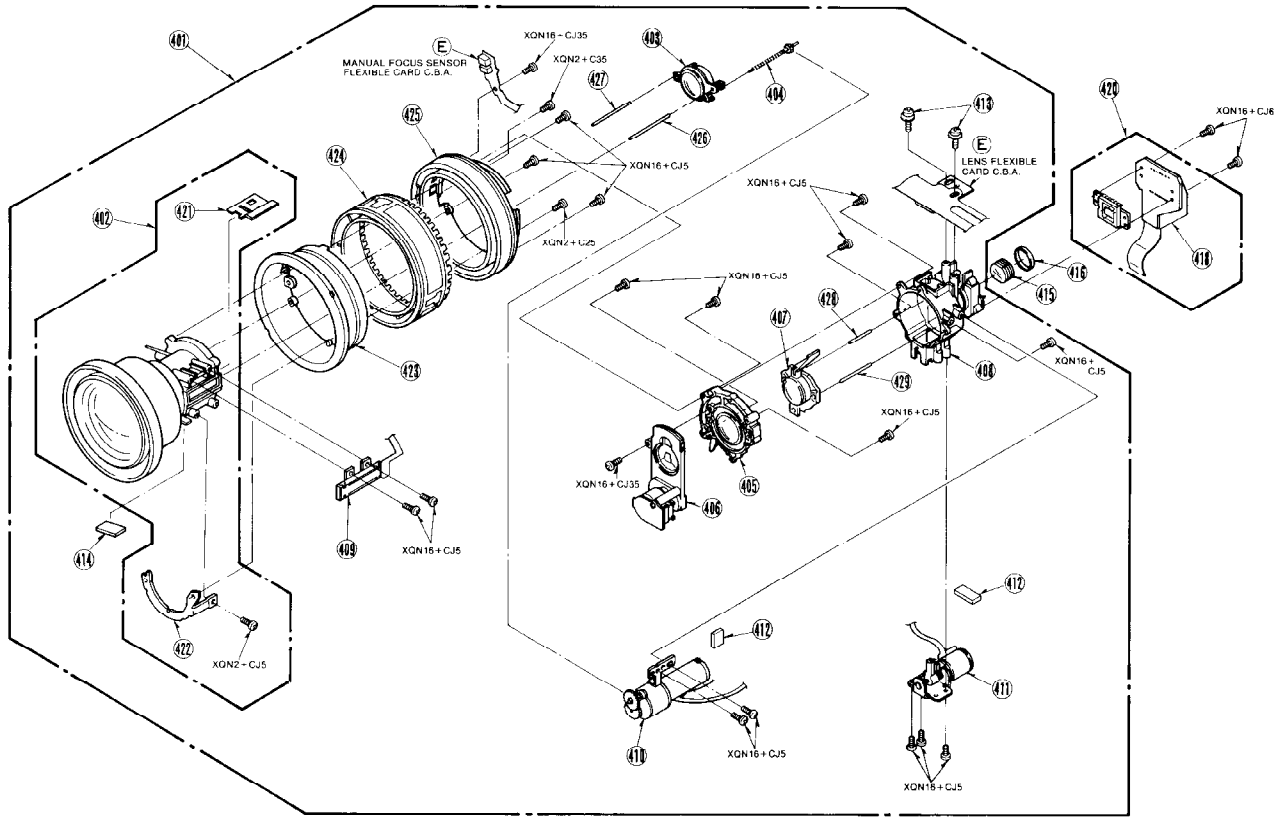
❷ VTR MECHANISM SECTION (2)



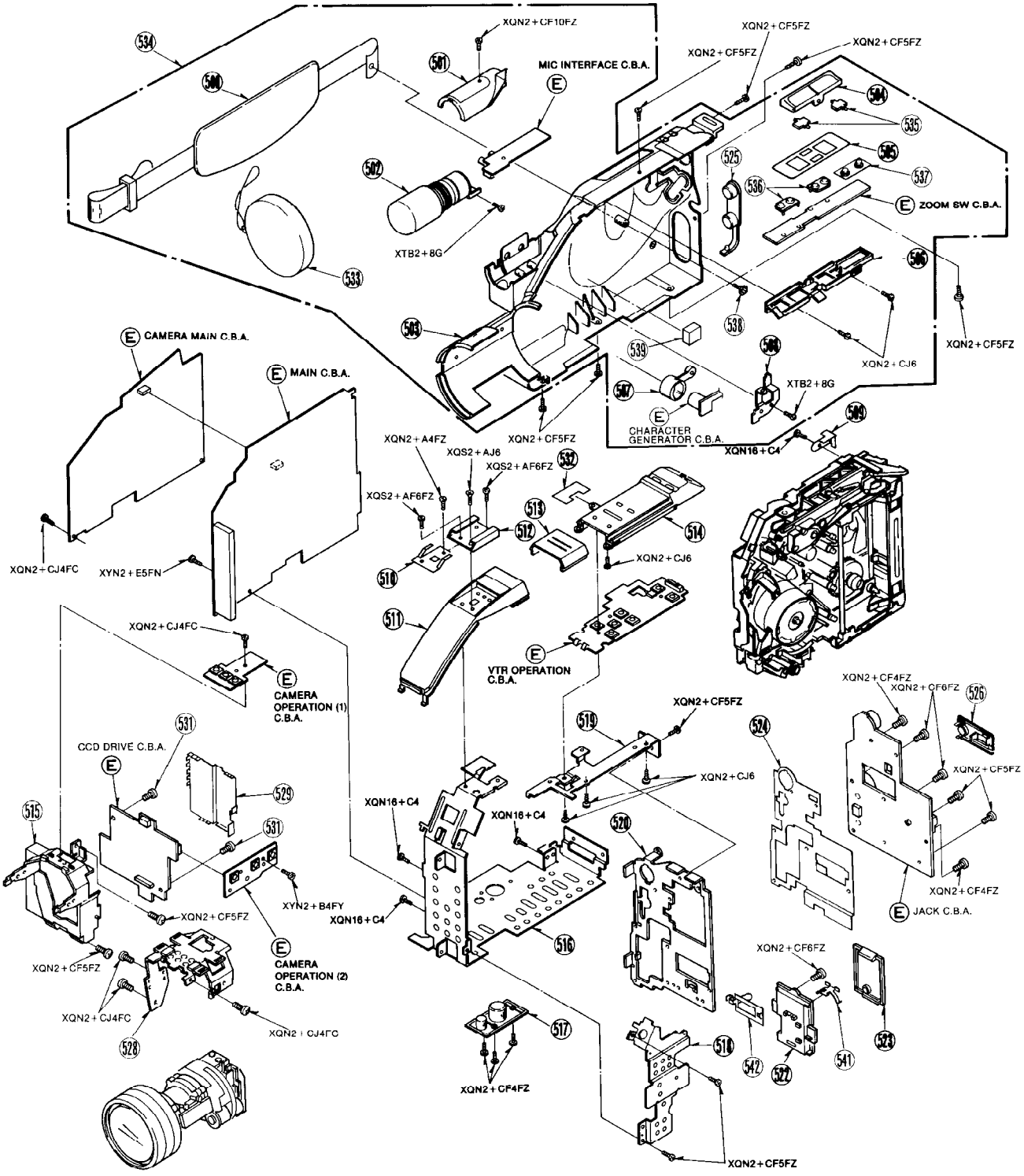
❸ VTR MECHANISM SECTION (3)



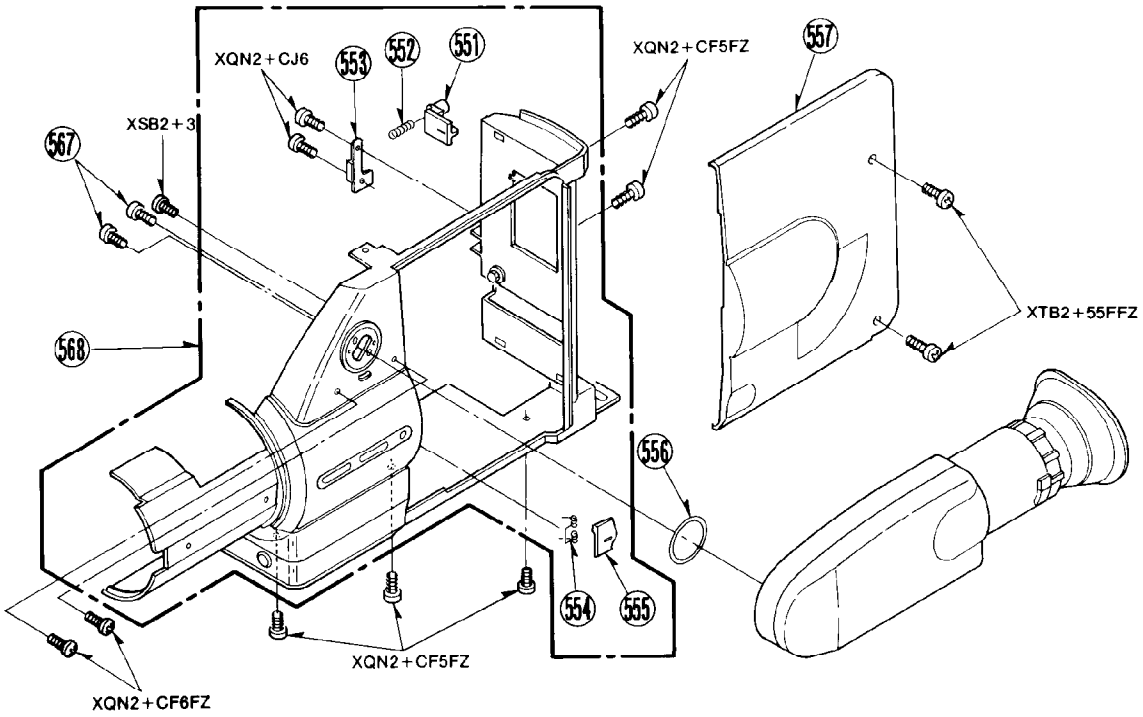
❹ CAMERA LENS SECTION

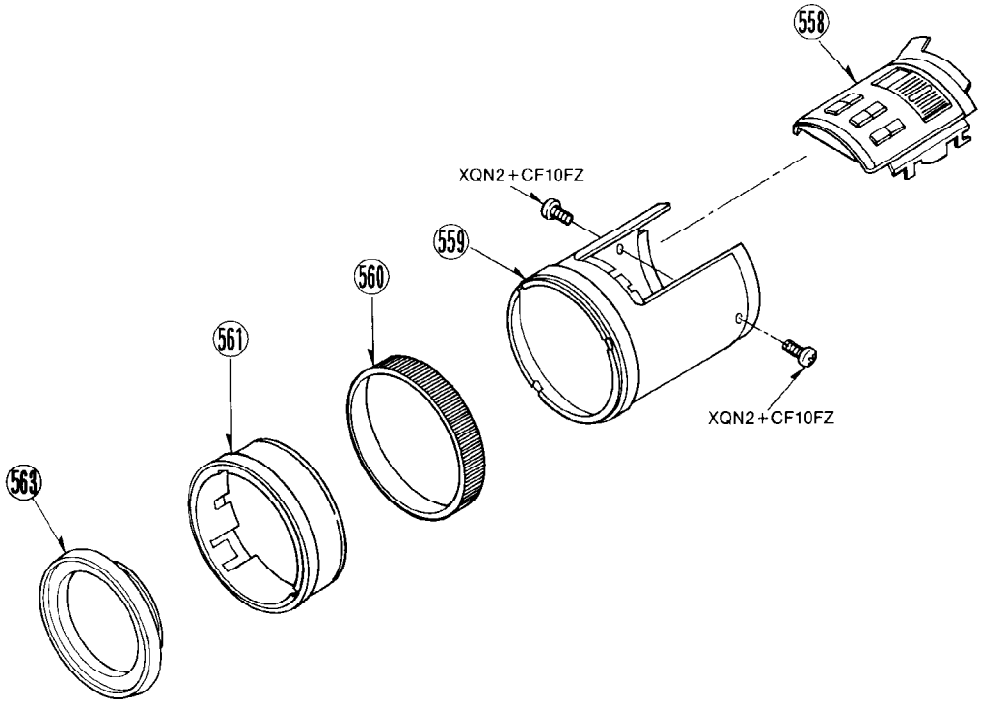


❺ FRAME & CASING PARTS SECTION (1)

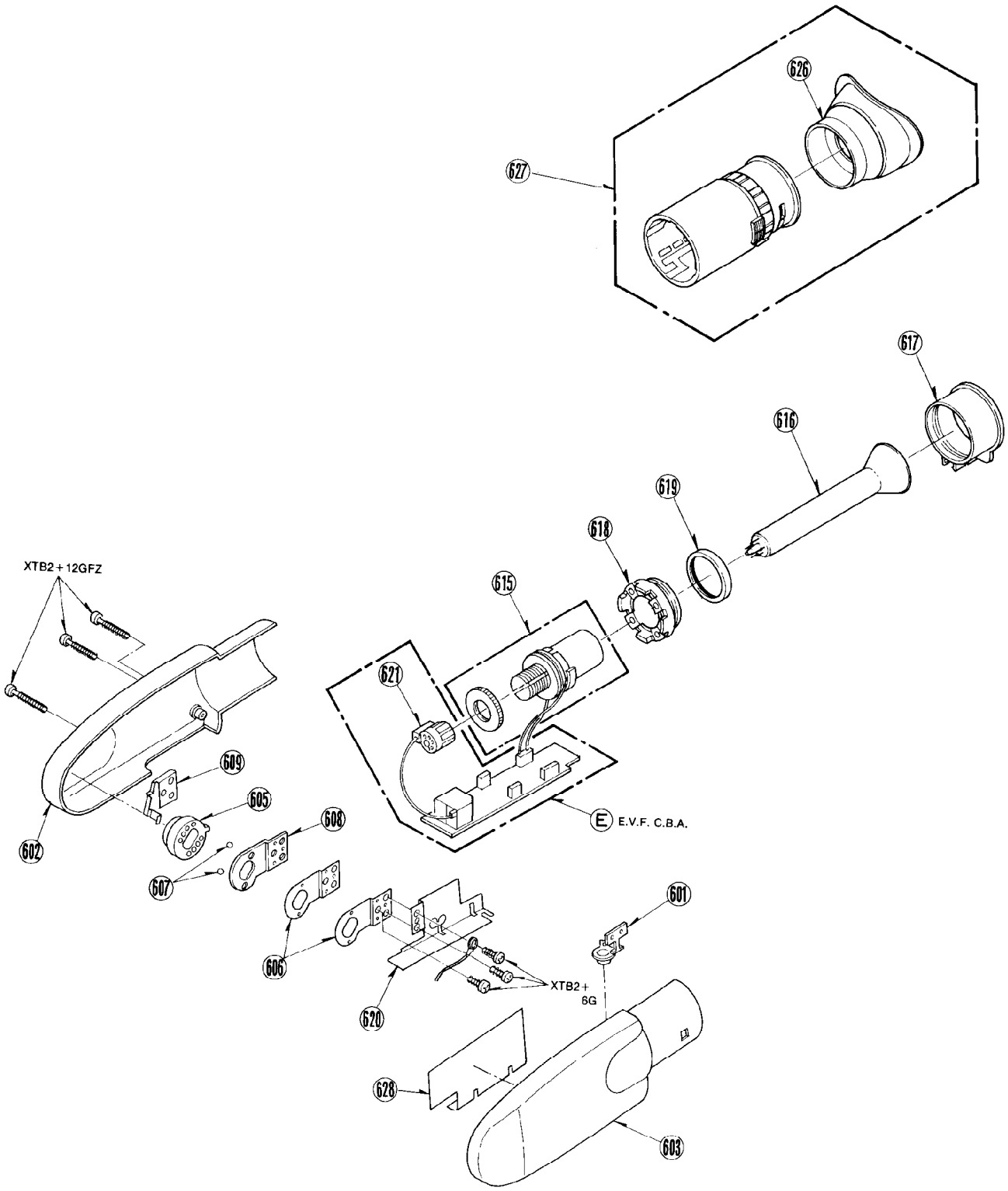


❻ FRAME & CASING PARTS SECTION (2)

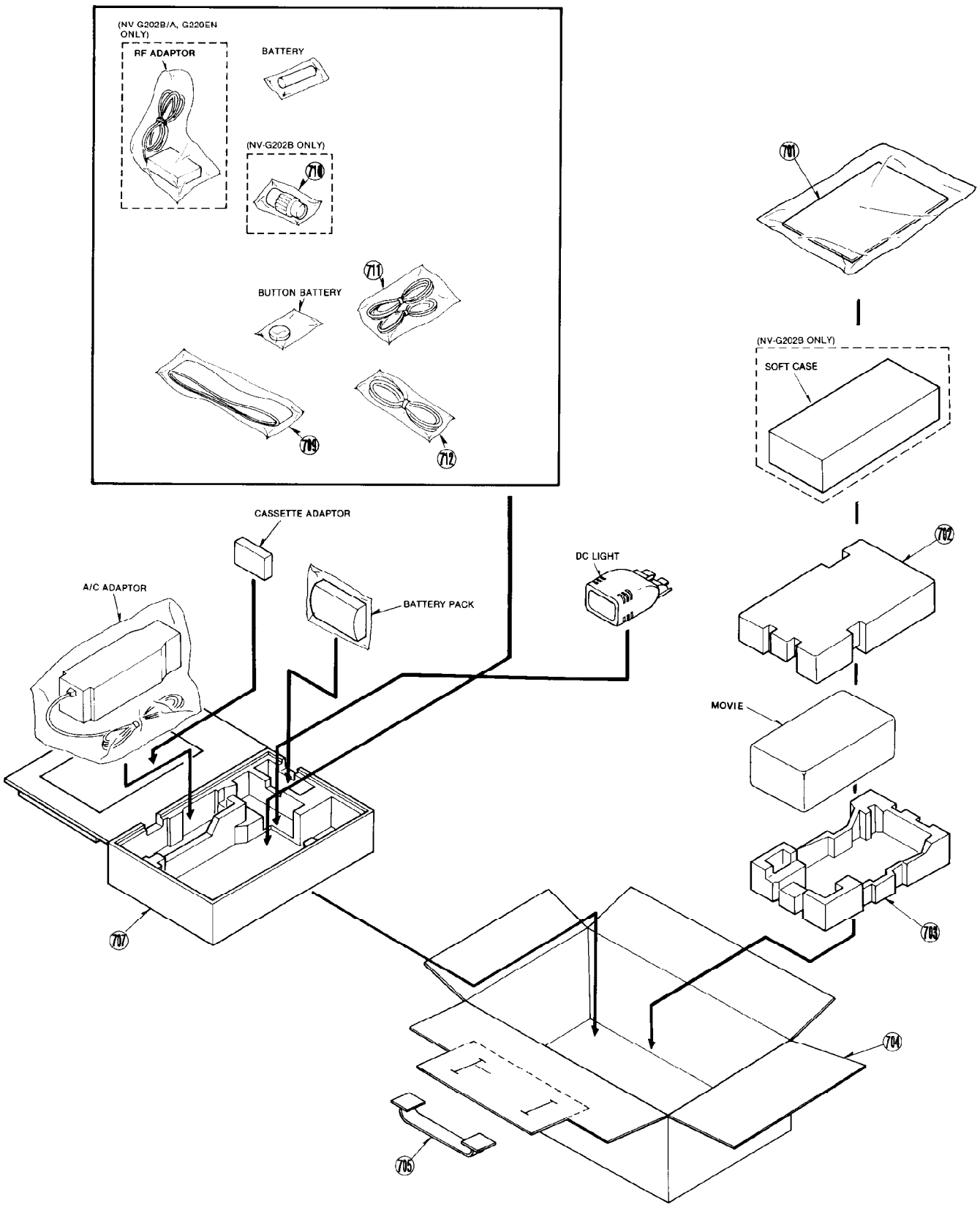




❼ E.V.F. SECTION



❽ PACKING PARTS & ACCESSORIES SECTION



PARTS LIST

MODEL NO.: NV-G202E/B/A, NV-G220EN, VW-AS1E/B/A

1. NV-G202E/B/A, NV-G220EN Mechanical Replacement Parts List

Note:1.* Be sure to make your orders of replacement parts according to this list.
2.IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components,use only the same type.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
2(1)		VMC0651	LOCK LEVER (A) SPRING	1	
3(1)		VML2370	LOCK LEVER (A)	1	
4(1)		VXA4241	STAND (L) U.	1	
5(1)		VMB2096	HOLDER SPRING (L)	1	
6(1)		VMB2095	SAFETY LEVER SPRING	1	
7(1)		VXA4489	STAND (R) U.	1	
8(1)		VMB2097	HOLDER SPRING (R)	1	
9(1)		VMX1042	WASHER	1	
11(1)		VXA4372	CASSETTE HOLDER U.	1	
101(1)		VDG0642	DRIVE GEAR (A)	1	
102(1)		VDG0643	DRIVE GEAR (C)	1	
103(1)		VDG0644	DRIVE GEAR (D)	1	
104(1)		VMD1727	T4 CAP	1	
106(1)		VMB2099	T (1) TURNER SPRING	1	
107(1)		VMB2101	A/C BASE SPRING	1	
108(1)		VMB2103	T5 ARM SPRING	1	
109(1)		VMD1718	TAPE OPENER	1	
110(1)		VMD1517	T1 RETURNER	1	
111(1)		VMX1844	T4 FLANGE	1	
112(1)		VMX1805	T4 POST	1	
113(1)		VMX1806	A/C COLLAR	1	
114(1)		VMD1500	S RACK GUIDE	1	
115(1)		VXA3907	S RACK U.	1	
116(1)		VXA3909	S SHAFT HOLDER (2) U.	1	
117(1)		VXP1197	S2 ROLLER POST U.	1	
118(1)		VMC0566	T1 SHAFT HOLDER PLATE	1	
119(1)		VMD1843	T RACK GUIDE	1	
120(1)		VMS4254	T1 SHAFT HOLDER PIN	1	
121(1)		VXA3915	T RACK U.	1	
122(1)		VXA3917	T SHAFT HOLDER (1) U.	1	
123(1)		VXP1162	T ROLLER POST U.	1	
124(1)		VXA3920	T2 SHAFT HOLER (2) U.	1	
125(1)		VXP1162A	ROLLER POST U.	1	
126(1)		VXA3923	T RAIL (L) U.	1	
127(1)		VXA3925	T RAIL (R) U.	1	
128(1)		VEK5122	A/C HEAD (B) (1) U.	1	
129(1)		VXA3931	PULLEY PLATE U.	1	
130(1)		VMD1671	T2 V STOPPER	1	
131(1)		VMC0586	SPRING	1	
132(1)		VMD1493	U-T1	1	
133(1)		VXA3940	ST-V STOPPER (1) U.	1	
134(1)		VXJ0086	IMPEDANCE ROLLER U.	1	
135(1)		VXL2061	PINCH ARM U.	1	
136(1)		VMB2087	ARM SPRING	1	
137(1)		VML2362	CORRECTOR (A)	1	
138(1)		VXL2064	CORRECTOR (B) U.	1	
139(1)		VXL1976	T5 ARM U.	1	
140(1)		VXP1157	T CLUTCH GEAR U.	1	
142(1)		VEG0971	CYLINDER U.	1	
143(1)		VEH0575	UPPER CYLINDER U.	1	
144(1)		VMX1061	WASHER	8	
145(1)		VHD0592	SCREW	1	
146(1)		VHD0561	SCREW	3	
147(1)		VMX1777	WASHER	1	
148(1)		VHN0047	NUT	1	
149(1)		VMB2036	A/C TILT SPRING	1	
150(1)		VHD0525	SCREW	1	
151(1)		VHD0699	SCREW	1	
152(1)		VHD0700	SCREW	1	
153(1)		VHN0169	NUT	1	
154(1)		VHD0593	SCREW	2	
155(1)		VHD0389	SCREW	3	
156(1)		VMB2102	CORRECTOR SPRING	1	
157(1)		VMB2100	P5 POST SPRING	1	
158(1)		VMA8113	A/C HEAD BASE	1	
159(1)		VMX1776	WASHER	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
160(1)		VMX1739	SPACER	1	
201(2)		VDG0645	LOADING GEAR (2)	1	
202(2)		VDG0646	LOADING GEAR (3)	1	
203(2)		VDG0647	LOADING GEAR (4)	1	
204(2)		VDG0648	LOADING GEAR (5)	1	
205(2)		VDG0649	LOADING GEAR (T1)	1	
206(2)		VDG0731	ZENEBA GEAR	1	
207(2)		VEM0359	LOADING MOTOR (2) U.	1	<!>
208(2)		VMA8111	WORM HOLDER	1	
209(2)		VMX1744	WORM SHAFT HOLDER	1	
210(2)		VXP1175	WORM U.	1	
211(2)		VMD1515	BAND GUIDE	1	
212(2)		VMD1518	CASS. POSITIONING PIECE (S)	1	
213(2)		VMD1519	CASS. POSITIONING PIECE (T)	1	
214(2)		VMD1530	FE CAP	1	
215(2)		VXA4244	LOADING GEAR S1 U.	1	
216(2)		VEK4700	FE HEAD U.	1	
217(2)		VMB2082	S4 POST SPRING	1	
218(2)		VMX1740	S4 LOWER FLANGE	1	
219(2)		VMX1859	S4 SLEEVE	1	
220(2)		VXA4247	S RAIL (1) U.	1	
221(2)		VXA3924	T1 RAIL (M) U.	1	
222(2)		VXA3920	LOCK BASE U.	1	
223(2)		VXG0029	CAM GEAR U.	1	
224(2)		VXG0023	LOADING GEAR T2 U.	1	
225(2)		VXL1960	SECTOR GEAR U.	1	
226(2)		VMB2084	PINCH HOLDING SPRING	1	
227(2)		VMB2085	PINCH PRESSURE SPRING	1	
228(2)		VXL1964	CORRECTOR DRIVE ARM U.	1	
229(2)		VXL2062	CENTRE GEAR U.	1	
230(2)		VXL2059	TENSION ARM U.	1	
231(2)		VXR0205	S REEL TABLE U.	1	
232(2)		VXZ0278	TENSION REGURATOR U.	1	
234(2)		VMX1061	WASHER	11	
235(2)		VMB2086	TENSION SPRING	1	
236(2)		VMX1840	WASHER	3	
237(2)		VHN0150	NUT	1	
238(2)		VMB2083	(T) RAIL SPRING	1	
239(2)		VMB2080	LOADING GEAR SPRING	1	
240(2)		VMB2091	EJECT LEVER (A) SPRING	1	
241(2)		VMB2093	EJECT LEVER (B) SPRING	1	
242(2)		VHN0158	NUT	1	
243(2)		VMB2081	(T) LOADING GEAR SPRING	1	
301(3)		VEM0384	CAPSTAN MOTOR U.	1	
302(3)		VDB1046	LOWER BEARING	1	
303(3)		VEK5078	STATOR U.	1	
304(3)		VBK0056	MR HEAD	1	
305(3)		VHD0439	SCREW	3	
306(3)		VJF0886	FPC HOLDER	1	
307(3)		VXP1225	ROTOR U.	1	
309(3)		VDP1300	PULLEY	1	
310(3)		VDW0212	CAPSTAN BELT	1	
311(3)		VMD1580	PULLEY CAP	1	
312(3)		VSH0044	SAFETY SWITCH	1	<!>
313(3)		VXS0095	EARTH BRUSH	1	
314(3)		VMZ1648	MECH. FLEX. BARRIER	1	
316(3)		VHD0684	SCREW	1	
401(4)		VXW0109	LENS U.	1	
402(4)		VXQ0294	LENS MAIN U.	1	
403(4)		VXP1300	2ND MOVING FRAME U.	1	
404(4)		VXP1302	SCREW SHAFT U.	1	
405(4)		VXQ0266	3RD FRAME LENS U.	1	
406(4)		VXL2126	IRIS U.	1	
407(4)		VXP1301	4TH MOVING FRAME U.	1	
408(4)		VMD1815	MASTER FLANGE	1	
409(4)		EVAJH4J03B14	ZOOM ENCODER U.	1	
410(4)		VEM0421	ZOOM MOTOR U.	1	
411(4)		VEM0422	FOCUS MOTOR U.	1	
412(4)		VMT0342	MOTOR CUSHION	2	
413(4)		VHD0665	SCREW	1	
414(4)		VMT0336	IRIS CUSHION	1	
415(4)		VDL0314	CRYSTAL FILTER	1	
416(4)		VMX2124	CCD CUSHION	1	
418(4)		VJB20342	CCD FLEXIBLE CARD	1	
420(4)		VEK5913	CCD U.	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
421(4)		VGF0416	SHADING PIECE	1	
422(4)		VMA8700	HOLD PLATE	1	
423(4)		VDW0182	FRONT FRAME	1	
424(4)		VDW0184	FOCUS RING	1	
425(4)		VDW0183	REAR FRAME	1	
426(4)		VMS4675	ZOOM GUIDE POLE	1	
427(4)		VMS4908	ZOOM GUIDE POLE (B)	1	
428(4)		VMS4676	FOCUS GUIDE POLE (A)	1	
429(4)		VMS4677	FOCUS GUIDE POLE (B)	1	
500(5)		VYC0437	GRIP BELT U.	1	
501(5)		VKM3112	MIC CASE	1	
502(5)		VEK5923	MIC U.	1	
503(5)		VYK4211	SIDE CASE (L) 1U.	1	
504(5)		VGU5800	ZOOM BUTTON	1	
505(5)		VGQ2841	ZOOM BUTTON SHEET	1	
506(5)		VGQ2442	ZOOM BUTTON HOLDER	1	
507(5)		VCQ2464	CHRA.CENE.TERMINAL HOLDER	1	
508(5)		VMP3151	MIC MOUNTING ANGLE	1	
509(5)		VMP3126	MOUNTING ANGLE (A)	1	
510(5)		VMC0726	SHOE SPRING	1	
511(5)		VYK4205	TOP OPERATION PANEL (A) U.	1	
512(5)		VMP2407	SHOE RAIL	1	
513(5)		VKF1684	CURSOR	1	
514(5)		VYK4206	TOP OPERATION PANEL (B) U.	1	
515(5)		VKF1831	SENSOR FRAME	1	
516(5)		VMP3680	MECH. CHASSIS FRAME	1	
517(5)		VMD1886	TRIPOD FRAME	1	
518(5)		VMP3605	EVF FIXING ANGLE	1	
519(5)		VMP3602	TOP PANEL ANGLE	1	
520(5)		VMP3603	REAR FRAME	1	
522(5)		VCQ2783	BACK UP BATTERY CASE	1	
523(5)		VKF1829	BATTERY COVER	1	
524(5)		VGQ2782	AV JACK SHEET	1	
525(5)		VKF1828	AV JACK COVER	1	
526(5)		VGQ2779	DC JACK COVER	1	
528(5)		VMP3604	CAMERA FRAME	1	
529(5)		VSC3604	SENSOR SHIELD PLATE	1	
531(5)		VHD0398	SCREW	2	
532(5)		VGQ2556	SPACER	1	
533(5)		VYQ0709	HOOD CAP U.	1	
534(5)		VYK4210	SIDE CASE (L) U.	1	
535(5)		VGQ2840	ZOOM BUTTON PIECE	2	
536(5)		VMC0712	RUBBER CONTACT	2	
537(5)		VMG0723	RUBBER SW	1	
538(5)		VHD0386	GRIP BELT SCREW	1	
539(5)		VCQ2597	SPACER	1	
541(5)		VMC0858	BACK UP ELECTRODE (+)	1	
542(5)		VMC0859	BACK UP ELECTRODE (-)	1	
551(6)		VGU5519	BATTERY EJECT BUTTON	1	
552(6)		VMB2216	BATTERY EJECT SPRING	1	
553(6)		VMP3269	BATTERY EJECT ANGLE	1	
554(6)		VMB1848	SAFETY SPRING	1	
555(6)		VML2394	SAFETY LEVER	1	
556(6)		VMX1694	EVF MOUNTING SPACER	1	
557(6)		VYP3940	CASSETTE COVER U.	1	NV-G202E/B/A
557(6)		VYP4058	CASSETTE COVER U.	1	NV-G202EN
558(6)		VYP3939	FOCUS PANEL U.	1	
559(6)		VKM2965	LENS COVER	1	
560(6)		VMG0685	MF RING RUBBER	1	
561(6)		VDW0176	MF RING	1	
563(6)		VDW0175	LENS HOOD	1	
567(6)		VHD0689	SCREW	2	
568(6)		VYK4202	SIDE CASE (R) U.	1	
601(7)		VGU5808	EJECT BUTTON	1	
602(7)		VKM2632	EVF CASE (L)	1	
603(7)		VKM2633	EVF CASE (R)	1	
605(7)		VGQ2446	ROTARY PIECE	1	
606(7)		VMC0731	ROTATION LOCK SPRING	2	
607(7)		VMP2327	STEEL BALL	2	
608(7)		VMP3124	STEEL BALL FIXING PLATE	1	
609(7)		VMC0730	SWITCHING SPRING	1	
615(7)		ELY07V570B	DY	1	<!>
616(7)		M01KGG007WB	CRT	1	<!>
617(7)		VGF0414	CRT MASKING	1	
618(7)		VJF0657	CRT HOLDER	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
619(7)		VMK1462	CRT RUBBER	1	
620(7)		VMZ1817	EVF BARRIER	1	
621(7)		VEE7529	CRT SOCKET U.	1	<!>
626(7)		VMG0532	EYE CAP	1	
627(7)		VYQ0584	EYESIGHT ADJUST CASE U.	1	
628(7)		VMZ2012	EVF BARRIER (B)	1	
701(8)		VQT4634	OPERATING INSTRUCTIONS	1	<!>NV-G202E
			(ENGLISH/GERMAN/FRENCH)		
701(8)		VQT4635	OPERATING INSTRUCTIONS	1	<!>NV-G202E
			(SPANISH/ITALIAN/DUTCH)		
701(8)		VQT4636	OPERATING INSTRUCTIONS	1	<!>NV-G202E
			(FINNISH/DANISH/SWEDISH)		
701(8)		VQT4632	OPERATING INSTRUCTIONS	1	<!>NV-G202B
			(ENGLISH)		
701(8)		VQT4637	OPERATING INSTRUCTIONS	1	<!>NV-G202A
			(ENGLISH)		
701(8)		VQT4638	OPERATING INSTRUCTIONS	1	<!>NV-G220EN
			(ENGLISH/CHINESE)		
701(8)		VQT4639	OPERATING INSTRUCTIONS	1	<!>NV-G220FN
			(ARABIC/HINDI)		
702(8)		VPN3404	CUSHION (UPPER)	1	
703(8)		VPN3405	CUSHION (LOWER)	1	
704(8)		VPG6410	PACKING	1	NV-G202E
704(8)		VPG6407	PACKING	1	NV-G202B
704(8)		VPG6411	PACKING	1	NV-G202A
704(8)		VPG6412	PACKING	1	NV-G220EN
705(8)		VPN2329	HANDLE	1	
707(8)		VPN3427	ACCESSORIES BOX	1	
709(8)		VFC1035	SHOULDER STRAP	1	
710(8)		VFA0097	BNC/PHONO PLUG	1	NV-G202B
711(8)		VFA0095	AV OUTPUT CABLE	1	NV-G202E
711(8)		VFA0039	AV OUTPUT CABLE	1	NV-G202B/A,NV-G220EN
712(8)		VJA0669	DC OUTPUT CABLE	1	
			JIG & TOOLS		
		VFM8180HUPF	VHS-C ALIGNMENT TAPE	1	PAL
		VFK0713	COLOUR TEMP.CONV.FILTER	1	(C12)
		VFK0716	COLOUR TEMP.CONV.FILTER	1	(C2)
		VFK0714	COLOUR TEMP.CONV.FILTER	1	(C8)
		VFK0698	18PIN EXTENSION CABLE	1	
		VFK0667	30PIN EXTENSION CABLE	1	
		VFK0670	18PIN FLAT CABLE	1	
		VFK0668	24PIN EXTENSION CABLE	1	
		VFK0672	13PIN EXTENSION CABLE	1	
		VFK0699	22PIN EVR CONNECTION CABLE	1	
		VFK0802	24PIN FLAT CABLE	1	
		VFK0803	14PIN FLAT CABLE	1	
		VFK0644	EVR FIXTURE	1	
		VFK0701ROM5	ROM 5	1	
		VFK0335	RETAINING RING REMOVER	1	
		VFK0743	H-Position ADJUSTMENT	1	
			DRIVER		
		VFK0343	CHECK LIGHT	1	
		VFK0326	HEX WRENCH SET	1	
		VFK27	HEAD CLEANING STICK	1	
		MOR265	MORLYTONE GREASE	1	

2. NV-G202E/B/A, NV-G220EN Electrical Replacement Parts List

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS ,K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf),P=uuF.
4. The P.C.Board units marked width'■'show below the main assembled parts.
5. Printed circuit board assembly with mark(NLA) is no longer available after discontinuation of the product.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			----- CAMERA SECTION -----		
		VEP22114A	CCD DRIVE C.B.A.	1	(NLA)
		VEP23128A	CAMERA MAIN C.B.A.	1	(NLA)
		VEK5916	LENS FLEXIBLE CARD C.B.A.	1	(NLA)
		VEK5917	MANUAL FOCUS SENSOR FLEXIBLE CARD C.B.A.	1	(NLA)
			----- E.V.F. SECTION -----		
		VEP28046A	E.V.F. C.B.A.	1	(NLA)
			------ VTR SECTION ------		
		VEP06808A	MAIN C.B.A.	1	(NLA)
		VEP06737A	VTR OPERATION C.B.A.	1	(NLA)
		VEP27071A	CAMERA OPERATION (1) C.B.A.	1	(NLA)
		VEP27074A	CAMERA OPERATION (2) C.B.A.	1	(NLA)
		VEP00536A	MIC INTERFACE C.B.A.	1	(NLA)
		VEP03941A	ZOOM OPERATION C.B.A.	1	(NLA)
		VEP00535A	JACK C.B.A.	1	(NLA)
		VEK5302	CHARACTOR GENERATOR C.B.A.	1	(NLA)
		VEP02370A	DRIVE C.B.A.	1	(NLA)
		VEP06762A	MECHANICAL FLEXIBLE CARD C.B.A.	1	(NLA)
	■	VEP22114A	CCD DRIVE C.B.A.		(NLA)
			CONNECTORS		
B201		VJS2961C030	CONNECTOR (FEMALE)	1	
B202		VJP3127D006	CONNECTOR (MALE)	1	
B204		VJP3127D006	CONNECTOR (MALE)	1	
			CAPACITORS		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C201		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C202		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C203		ECST1CX685Z	T.CAPACITOR 16V 6.8U	1	
C204		ECEV1EA100	E.CAPACITOR CH 25V 10U	1	
C209		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C210		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C212		ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C214		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C215		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C217		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C218		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C219		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C220		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C228		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C229,30		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	2	
C231		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C232		ECST1CX685Z	T.CAPACITOR 16V 6.8U	1	
C233		ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C234		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C235		ECEV1AA221	E.CAPACITOR CH 10V 220U	1	
C240		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C241		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C242		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	1	
C243		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C244		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C245-47		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	3	
C248-50		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	3	
C251		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C252-57		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	6	
C260		ECEV0JA470	E.CAPACITOR 6.3V 47U	1	
C261		ECRJA020E11	CAPACITOR	1	
C262		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C263		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C265		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C266		ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C267		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C268		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C269		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	1	
C275		ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
			DIODES		
D201		MA110	DIODE	1	
D202		MA728	DIODE	1	
D203		MA110	DIODE	1	
D204		MA133	DIODE	1	
DZ13		MA132WA	DIODE	1	
			CONNECTORS		
FP203		VJS2960A014	CONNECTOR (FEMALE)	1	
			INTEGRATED CIRCUITS		
IC201		TC6070AU	IC	1	
IC202		MN3110SA	IC	1	
IC203		AN2012SB	IC	1	
IC204		TC7S04F	IC	1	
			COILS		
L201		VLQ0163K150	COIL 15UH	1	
L203		VLQ0319F221	COIL 220UH	1	
L204		VLQ0555	COIL	1	
L205		VLQ0163K150	COIL 15UH	1	
L207		VLQ0319F150	COIL 15UH	1	
L209,10		VLQ0291	COIL	2	
L211		VLQ0555	COIL	1	
L212		VLQ0291	COIL	1	
L220		VLQ0401K3R9	COIL 3.9UH	1	
L221		VLQ0401K100	COIL 10UH	1	
L222		VLQ0576	COIL	1	
L231,32		VLQ0576	COIL	2	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			TRANSISTORS		
Q204		2SD2216	TRANSISTOR	1	
Q209		2SC4626	TRANSISTOR	1	
			RESISTORS		
R202		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R204		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R205		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R213		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R214		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R217		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R218		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R219		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R220		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R222		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R224		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R226		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R227		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R228		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R229		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R232		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R234		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R235		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R238		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R239		ERJ3GEYJ560	M.RESISTOR CH 1/16W 56	1	
R242		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R253		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R254		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R255		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R260		ERJ3GEYJ220	M.RESISTOR CH 1/16W 22	1	
R265		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R267		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R268		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R270		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R273		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R274		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
			CRYSTAL OSCILLATORS		
X201		VSX0449	CRYSTAL OSCILLATOR	1	
	■	VEPZ3128A	CAMERA MAIN C.B.A.		(NIA)
			CONNECTORS		
B301		VJP3126D030	CONNECTOR (MALE)	1	
B302		VJP2963C018	CONNECTOR (MALE)	1	
B303		VJP3073C022	CONNECTOR (MALE)	1	
B702		VJP2963C018	CONNECTOR (MALE)	1	
			CAPACITORS		
C101		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C102		ECUX1C224ZFV	C.CAPACITOR CH 16V 0.22U	1	
C103		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C104,05		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	2	
C110		ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C115		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C116		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C117		ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C118		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C121		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C122		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C130		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C131-33		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C137		ECEV0JA220	E.CAPACITOR 6.3V 22U	1	
C138		ECST0JX226Z	T.CAPACITOR 6.3V 22U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C139-41		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C305,06		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C307		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C309		ECUM1C335ZFM	C.CAPACITOR 16V 33U	1	
C310-12		ECUM1C105ZFN	C.CAPACITOR 16V 1U	3	
C313		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C314		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C315-17		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	3	
C318		ECEV1HA2R2	E.CAPACITOR 50V 2.2U	1	
C319		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C320		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C321		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C322		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C323		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C324		ECSTOGC476Z	T.CAPACITOR CH 4V 47U	1	
C325		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C326		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C327		ECEV0JA470	E.CAPACITOR 6.3V 47U	1	
C328,29		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	2	
C330		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C331		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C332		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C334		ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C335		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C336		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C337,38		ECUM1C105ZFN	C.CAPACITOR 16V 1U	2	
C341,42		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C343		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C344		ECEV0JA330	E.CAPACITOR 6.3V 33U	1	
C345		ECEV1AA470	E.CAPACITOR 10V 47U	1	
C352		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C353		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C355,56		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	2	
C357		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C358,59		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C360		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C361		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C363		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C367		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C368		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C374		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C376		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C377		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C380		ECUX1H331JCV	C.CAPACITOR CH 50V 330P	1	
C381-83		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C384		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C386		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C391		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C394		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C395		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C396		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C397		ECUX1H050CCV	C.CAPACITOR CH 50V 5P	1	
C398		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C399		ECUX1H100DCV	C.CAPACITOR CH 50V 10P	1	
C400		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C404		ECSTOGY106Z	T.CAPACITOR CH 4V 10U	1	
C414		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C415		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C418		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C701		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C702		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C703		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C704		ECEV1HA3R3	E.CAPACITOR 50V 3.3U	1	
C705		ECSTOGY106Z	T.CAPACITOR CH 4V 10U	1	
C706		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C707		ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C708		ECSTOJY106Z	T.CAPACITOR 6.3V 10U	1	
C709		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C710,11		ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	2	
C712		ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C713		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C714		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C716		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C717		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C718		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C719	ECUX1C6832FV	C.CAPACITOR CH 16V 0.068U	1	
C720-23	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C724	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C725	ECEV05A470	E.CAPACITOR 4V 47U	1	
C727	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C728,29	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	2	
C730	ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C731	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C732	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C733	ECEV1CA100	E.CAPACITOR 16V 10U	1	
C734	ECEV1CA470	E.CAPACITOR 16V 47U	1	
C744,45	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	2	
C747	ECEV0JA470	E.CAPACITOR 6.3V 47U	1	
C760	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C763	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C765	ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C766	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C770	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C780	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C781	ECEV1CA100	E.CAPACITOR 16V 10U	1	
C782	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C790	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
		DIODES		
D101	MA110	DIODE	1	
D105	MA132WK	DIODE	1	
D301	MA110	DIODE	1	
D302	MA728	DIODE	1	
D303	MA8047M	DIODE	1	
D701	MA110	DIODE	1	
D703	MA110	DIODE	1	
D704,05	MA132WA	DIODE	2	
		FILTERS		
FL301	ELB4D522	FILTER	1	
FL302	EIK4EW006T	FILTER	1	
FL304	ELB4E517	FILTER	1	
FL305	ELB4D521	FILTER	1	
		CONNECTORS		
FP701	VJS2958D024	CONNECTOR (FEMALE)	1	
		INTEGRATED CIRCUITS		
IC101	MN73U39VSMS	IC	1	
IC102	MN4464SV08LL	IC	1	
IC103	MN1551VSTU	IC	1	
IC104	AN2355S	IC	1	
IC105	LM311DB	IC	1	
IC303	MC68HC05N483	IC	1	
IC304,05	M62352GP	IC	2	
IC307	MC14066BF	IC	1	
IC308	LM324DB	IC	1	
IC310	LM393DB	IC	1	
IC311	LM339DB	IC	1	
IC314	AN2165FHP	IC	1	
IC315	MN73512XWAS	IC	1	
IC318	VEFH09E	IC	1	
IC326	TC4S66F	IC	1	
IC701	LM358DB	IC	1	
IC702	AN2585FAP	IC	1	
IC703	MN6781VLGR	IC	1	
IC704	TC7S08F	IC	1	
IC707	AN6663SP	IC	1	
IC708	TD6504F	IC	1	
IC709	LM324DB	IC	1	
IC710	UPD7554AG515	IC	1	
IC711	M62352GP	IC	1	
IC713	MN12821R	IC	1	
IC714	AN6545SP	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		COILS		
L101	VLQ0319K331	COIL 330UH	1	
L103	VLQ0163K150	COIL 15UH	1	
L301-03	VLQ0319F150	COIL 15UH	3	
L304	VLQ0426J330	COIL 33UH	1	
L305	ELJFA820JB	COIL 82UH	1	
L307	VLQ0163K150	COIL 15UH	1	
L310,11	VLQ0426J560	COIL 56UH	2	
L312	VLQ0319F150	COIL 15UH	1	
L315	VLQ0426J101	COIL 100UH	1	
L316	VLQ0319F150	COIL 15UH	1	
L701	VLQ0319F150	COIL 15UH	1	
L702	VLQ0319K150	COIL 15UH	1	
L704	VLQ0319F150	COIL 15UH	1	
L705,06	VLQ0319K101	COIL 100UH	2	
L708,09	VLQ0319F150	COIL 15UH	2	
L710	VLQ0163K150	COIL 15UH	1	
		TRANSISTORS		
Q101	2SC4627	TRANSISTOR	1	
Q110	2SD2216	TRANSISTOR	1	
Q111	XP4601	TRANSISTOR-TRANSISTOR	1	
Q301	2SC4627	TRANSISTOR	1	
Q302,03	XP1216	TRANSISTOR-TRANSISTOR	2	
Q304	2SD2216	TRANSISTOR	1	
Q305	XP1401	TRANSISTOR-TRANSISTOR	1	
Q306	2SD2216	TRANSISTOR	1	
Q307	XP1401	TRANSISTOR-TRANSISTOR	1	
Q308	XP4501	TRANSISTOR-TRANSISTOR	1	
Q309	2SD2216	TRANSISTOR	1	
Q310	XP4501	TRANSISTOR-TRANSISTOR	1	
Q311	2SB1462	TRANSISTOR	1	
Q312	XN4608	TRANSISTOR-TRANSISTOR	1	
Q313	2SD1979	TRANSISTOR	1	
Q321	2SD2216	TRANSISTOR	1	
Q322	2SC4627	TRANSISTOR	1	
Q323	2SD2216	TRANSISTOR	1	
Q324	XP1212	TRANSISTOR-TRANSISTOR	1	
Q325	XP1215	TRANSISTOR-TRANSISTOR	1	
Q326,27	2SB1462	TRANSISTOR	2	
Q329	2SD2216	TRANSISTOR	1	
Q331	XP4401	TRANSISTOR-TRANSISTOR	1	
Q337-39	2SC4627	TRANSISTOR	3	
Q340	2SD2216	TRANSISTOR	1	
Q341	2SC3938	TRANSISTOR	1	
Q342	2SD2216	TRANSISTOR	1	
Q701	2SD2216	TRANSISTOR	1	
Q702	2SD2210	TRANSISTOR	1	
		COMBINATION PARTS		
QR101	UN9214	TRANSISTOR-RESISTOR	1	
QR102	UN9213	TRANSISTOR-RESISTOR	1	
QR103	UN9213	TRANSISTOR-RESISTOR	1	
QR104	UN9210	TRANSISTOR-RESISTOR	1	
QR304	UN9214	TRANSISTOR-RESISTOR	1	
QR305	UN9213	TRANSISTOR-RESISTOR	1	
QR701	UN9211	TRANSISTOR-RESISTOR	1	
QR703	UN9211	TRANSISTOR-RESISTOR	1	
QR705,06	UN9110	TRANSISTOR-RESISTOR	2	
QR708	UN9110	TRANSISTOR-RESISTOR	1	
QR711	UN9210	TRANSISTOR-RESISTOR	1	
QR712	UN9211	TRANSISTOR-RESISTOR	1	
		RESISTORS		
R101	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R108	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R110	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R114	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R115	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R129-31	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	3	
R133-35	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R137-39	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	3	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R141-43	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	3	
R144	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R145	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R148	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R149	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R150	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R151	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R152	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R153	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R154	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R155	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R156	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R157	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R158	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R159	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R160	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R161	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R162	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R163	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R164	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R165	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R166	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R170	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R301,02	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R303	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R304	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R305	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R306	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R307	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R308	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R312	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R313	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R314-16	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	3	
R317	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R318-20	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	3	
R321	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R322	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R323	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R324	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R325	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R326	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R327	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R328	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R329	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R333	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R334	ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R336	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R337	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R338,39	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R340	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R341	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R342	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R343	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R345-47	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	3	
R349	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R352	ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R353	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R354	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R355	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R356	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R357	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R361	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R363	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R366	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R369	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R370	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R371	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R372	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R373	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R374	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R375	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R376	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R377	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R378	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R379	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R380	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R382	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R383	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R385	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R387	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R389	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R391	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R392	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R396	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R397-99	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R410	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R411	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R412	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R413	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R417	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R419	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R420	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R421.22	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	2	
R424	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R425	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R427	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R429	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R431	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R433	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R436	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R443	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R450	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R457	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R458	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R459	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R460	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R461-63	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	3	
R465	ERJ6GMY0R00	M.RESISTOR CH 1/10W 0	1	
R466	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R468	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R469-71	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R472,73	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R474	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R480	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1	
R481	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R485	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R486	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R488	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R489	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R490	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R492,93	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R494	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R495	ERJ6GMYJ103	M.RESISTOR CH 1/10W 10K	1	
R496	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R497	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R498	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R499	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R500	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R501	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R502	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R503	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R506	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R507	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R508	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R509	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R510	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R511	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R513	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R514	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R515	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R521	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R524	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R526	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R527	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R528	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R529	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R530-33	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	4	
R535	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R536-38	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R540	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R541		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R542,43		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R544		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R545		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R546		ERJ3GEYJ155	M.RESISTOR CH 1/16W 1.5M	1	
R547		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R548		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R555		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R560		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R561		ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R562		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R563		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R564,65		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R566		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R568		ERJ6GMYJ102	M.RESISTOR CH 1/10W 1K	1	
R574		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R575		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R577-88		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	12	
R589		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R590		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R591-93		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R597		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R599		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R701		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R702		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R703		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R704		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R705		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R706		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R707		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R708		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R709		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R710		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R711		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R712		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R713		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R714		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R715		ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R716		ERJ3GEYG472	M.RESISTOR CH 1/16W 4.7K	1	
R717		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R718		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R719		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R720,21		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R722-26		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	5	
R727,28		ERJ3GEYJ3R3	M.RESISTOR CH 1/16W 3.3R	2	
R729,30		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R731		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R732		ERJ3GEYG562	M.RESISTOR CH 1/16W 5.6K	1	
R733,34		ERJ3GEYG332	M.RESISTOR CH 1/16W 3.3K	2	
R735		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R736		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R737-39		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R740		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R741		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R742		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R744		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R745		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R746		ERJ6GMYJ181	M.RESISTOR CH 1/10W 180	1	
R747		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R748,49		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R750		ERJ3GEYG303	M.RESISTOR CH 1/16W 30K	1	
R751		ERJ3GEYG103	M.RESISTOR CH 1/16W 10K	1	
R754		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R755		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R756		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R757,58		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R764,65		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
R768,69		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R771		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R772-74		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	3	
R775		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R778,79		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	2	
R780		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R781		ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R782		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R784		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R785		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R786		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R790		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R794		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R796		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R797		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R798		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R799		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
			THERMISTORS		
TH701		VRT0032K152	THERMISTOR	1	
			VARIABLE RESISTORS		
VR301		EVM7JSX30B15	V.RESISTOR 100K	1	
VR302		EVM7JSX30B53	V.RESISTOR 5K	1	
VR303		EVM7JSX30B25	V.RESISTOR 200K	1	
			CRYSTAL OSCILLATORS		
X101		VSX0412	CRYSTAL OSCILLATOR	1	
X301		EFOV4194B0A	CRYSTAL OSCILLATOR	1	
X701		EFOV6754B0A	CRYSTAL OSCILLATOR	1	
X702		EFOV8004B0A	CRYSTAL OSCILLATOR	1	
			MISCELLANEOUS		
		VMZ1903	PROCESS SHIELD BARRIER	1	
	■	VEK5916	LENS FLEXIBLE CARD C.B.A.		(NLA)
			MISCELLANEOUS		
		SG-211S	PHOTO COUPLER	1	
	■	VEK5917	MANUAL FOCUS SENSOR		(NLA)
			FLEXIBLE CARD C.B.A.		
			MISCELLANEOUS		
		SG-211S	PHOTO COUPLER	2	
	■	VEP28046A	E.V.F. C.B.A.		(NLA)
			CAPACITORS		
C801		ECHU1C104J	P.CAPACITOR 16V 0.1U	1	
C802		ECEA1CKE101	E.CAPACITOR 16V 100U	1	
C804		ECUM1C155ZFN	C.CAPACITOR CH 16V 1.5U	1	
C805		ECEA0JKE221	E.CAPACITOR 6.3V 220U	1	
C806		ECUM1E123KBN	C.CAPACITOR CH 25V 0.012U	1	
C807		ECEA1HKS010	E.CAPACITOR 50V 1U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C808		ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C809		ECA1EKF100	E.CAPACITOR 25V 10	1	
C810		ECUM2A472JUM	C.CAPACITOR CH 4700P	1	
C811		ECEA1CKE101	E.CAPACITOR 16V 100U	1	
C812		ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C813		VCKOO88K151	S.CAPACITOR	1	
C814		ECEA1HKS010	E.CAPACITOR 50V 1U	1	
C815		ECUM2H331KBM	C.CAPACITOR	1	
C816		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C820		ECUM2A102JUN	C.CAPACITOR CH 100V 1000P	1	
C831		ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
			DIODES		
D801		MA141K	DIODE	1	
D802		SFPL-52	DIODE	1	
			INTEGRATED CIRCUITS		
IC801		AN2515S	IC	1	
			COILS		
L801		VLQ0319K390	COIL 39UH	1	
L802		ELH5L215D	COIL	1	
			CONNECTORS		
P801		VJP3318A006	CONNECTOR (MALE)	1	
P802		VJP3007E004	CONNECTOR (MALE)	1	
P803		VJP1229T	CONNECTOR (MALE)	1	
P804		VJP3007E003	CONNECTOR (MALE)	1	
			TRANSISTORS		
Q802		2SD968A-S	TRANSISTOR	1	
Q803		2SA1532	TRANSISTOR	1	
			RESISTORS		
R801		ERJ6ENF4422	M.RESISTOR	1	
R802		ERJ6GEYJ3R9	M.RESISTOR CH 1/10W 3.9	1	
R805		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R807		ERJ3GEYJ4R7	M.RESISTOR CH 1/16W 4.7	1	
R808		ERJ3GEYJ242	M.RESISTOR CH 1/16W 2.4K	1	
R809		ERJ3GEYJ564	M.RESISTOR CH 1/16W 560K	1	
R810		ERJ6GMYF104	M.RESISTOR CH 1/10W 100K	1	
R814		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R815,16		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R817		ERJ3GEYJ242	M.RESISTOR CH 1/16W 2.4K	1	
R818		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R819,20		ERJ6GEYJ335	M.RESISTOR CH 1/10W 3.3M	2	
R821		ERJ6GMYJ105	M.RESISTOR CH 1/10W 1M	1	
R823		ERJ3GEYJ220	M.RESISTOR CH 1/16W 22	1	
R825		VSP0015A025	FUSE	1	<!>
R830		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R832		ERJ6ENF4222	RESISTOR	1	
R833		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
			SWITCHES		
SW801		VSP0601	SWITCH	1	
SW802		EVQQFV02K	SWITCH	1	
			TRANSFORMERS		
T801		ETF08L4B	TRANSFORMER	1	<!>
			VARIABLE RESISTORS		
VR801		EVM7JSX30BE2	V.RESISTOR	1	
VR803		EVMLPNA00BV6	V.RESISTOR	1	<!>
VR804		EVMLPNA00BE6	V.RESISTOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			MISCELLANEOUS		
		VGQ2511	JOG SPACER	1	
	■	VEP06808A	MAIN C.B.A.		(NLA)
			CONNECTORS		
B4001		VJS2964C013	CONNECTOR (FEMALE)	1	
B6002		VJP3127D014	CONNECTOR (MALE)	1	
B6003		VJS2961C024	CONNECTOR (FEMALE)	1	
B6005		VJS3024C018	CONNECTOR (FEMALE)	1	
B6006		VJP3326D016	CONNECTOR (MALE)	1	
B6007		VJP2962C012	CONNECTOR (MALE)	1	
B8001		VJS3024C018	CONNECTOR (FEMALE)	1	
			CAPACITORS		
C1001		ECST1VY334Z	T.CAPACITOR CH 35V 0.33U	1	
C1002		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C1003		ECUX1HZ71JCV	C.CAPACITOR CH 50V 270P	1	
C1006		ECUX1H331KBV	C.CAPACITOR CH 50V 330P	1	
C1007		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1008		ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C1009		ECEV1CA470	E.CAPACITOR 16V 47U	1	
C1010		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C1011		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C1012		ECST1CY105Z	T.CAPACITOR 16V 1U	1	
C1013,14		ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	2	
C1017		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1018		ECUX1H681KBV	C.CAPACITOR CH 50V 680P	1	
C1019		ECG0KA8R2	CAPACITOR	1	
C1020		ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C1021,22		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C1023		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C1024		ECST1ACZ226Z	T.CAPACITOR CH 10V 22U	1	
C1025,26		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C1027		ECEV1CA470	E.CAPACITOR 16V 47U	1	
C1028		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C1029		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C1030,31		ECEV1CA470	E.CAPACITOR 16V 47U	2	
C1034		ECEV1AA221	E.CAPACITOR CH 10V 220U	1	
C1036		ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C1038		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C1101		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C1102		ECEV0GA101	E.CAPACITOR 4V 100U	1	
C3001,02		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	2	
C3004		ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C3005		ECEV05A470	E.CAPACITOR 4V 47U	1	
C3006		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3007		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C3008		ECEV05A470	E.CAPACITOR 4V 47U	1	
C3010		ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3013		ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C3014		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C3015,16		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C3017		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C3018		ECEV05A470	E.CAPACITOR 4V 47U	1	
C3025		ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3026		ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C3027		ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C3028		ECUX1H561KBV	C.CAPACITOR CH 50V 560P	1	
C3030		ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C3035		ECEV0GA221	E.CAPACITOR CH 4V 220U	1	
C3036		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3037		ECEV05A470	E.CAPACITOR 4V 47U	1	
C3038		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C3039		ECEV0GA101	E.CAPACITOR 4V 100U	1	
C3040		ECEV0GA221	E.CAPACITOR CH 4V 220U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3045	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C3046	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C3047	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C3048	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3101	ECUM1E104KBM	C.CAPACITOR CH 25V 0.1U	1	
C3102	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C4001	ECUX1H122KBV	C.CAPACITOR CH 50V 1200P	1	
C4002	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C4003	ECST1VY334Z	T.CAPACITOR CH 35V 0.33U	1	
C4004	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C4005	ECEV1CA100	E.CAPACITOR 16V 10U	1	
C4006	ECUM1H153KBN	C.CAPACITOR CH 50V 0.015U	1	
C4007	ECEV05A470	E.CAPACITOR 4V 47U	1	
C4008,09	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C4010-12	ECEV0JA220	E.CAPACITOR 6.3V 22U	3	
C4013	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C4014	ECUM1H562KBN	C.CAPACITOR CH 50V 5600P	1	
C4015	ECUM1H123KBN	C.CAPACITOR CH 50V 0.012U	1	
C4016	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C4017	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C4018	ECEV1CA100	E.CAPACITOR 16V 10U	1	
C4019	ECEV05A470	E.CAPACITOR 4V 47U	1	
C4020,21	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C4022	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C4023	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C4024	ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C4025	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C4026	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C4027	ECUX1H821KBV	C.CAPACITOR CH 50V 820P	1	
C4028	ECUM1H183KBN	C.CAPACITOR CH 50V 0.018U	1	
C4029	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C4031	ECUX1H562KBV	C.CAPACITOR CH 50V 5600P	1	
C4033	ECEV05A470	E.CAPACITOR 4V 47U	1	
C4034	ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C4035	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C4036	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C4038	ECUX1H471KBV	C.CAPACITOR CH 50V 470P	1	
C4039	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C4040	ECST1AC226Z	T.CAPACITOR CH 10V 22U	1	
C4041	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C4043	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5001	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5002	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5005	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5006	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	1	
C5007	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5008	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C5009	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5010	ECEV05A470	E.CAPACITOR 4V 47U	1	
C5012	ECEV05A470	E.CAPACITOR 4V 47U	1	
C5013	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5014	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5015	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C5016	ECEV05A470	E.CAPACITOR 4V 47U	1	
C5017	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5018	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C5019	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5020,21	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	2	
C5022	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5023	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C5024	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5025	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C5026	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5027,28	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	2	
C5029-31	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C5033,34	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	2	
C5035,36	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C5037	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5038	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C5039	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C5040	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C5041	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5042	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5043	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C5044,45	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C5046	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C5049	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C5050	ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	
C5052	ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C5054	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5056	ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C5101	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C6001	ECEV1CA220	E.CAPACITOR CH 10V 22U	1	
C6002	ECEV1HA3R3	E.CAPACITOR 50V 3.3U	1	
C6004	ECEV05A470	E.CAPACITOR 4V 47U	1	
C6005	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6006	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C6007	ECRJA030E11	TRIMMER	1	
C6008,09	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C6010-12	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C6013	ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C6014	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6015,16	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	2	
C6017	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6018,19	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	2	
C6020	ECEV05A470	E.CAPACITOR 4V 47U	1	
C6021	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6022	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C6024	ECEV1CA100	E.CAPACITOR 16V 10U	1	
C6026	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C6027	ECUX1H561KBV	C.CAPACITOR CH 50V 560P	1	
C6028	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C6029,30	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C6040	ECUM1C105ZFN	C.CAPACITOR 16V 1U	1	
C6202	ECUX1H122KBV	C.CAPACITOR CH 50V 1200P	1	
C6203	ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C6205	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C6206	ECUX1C473ZFV	C.CAPACITOR CH 16V 0.047U	1	
C6207	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C6208	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6209	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C6211	ECUM1E104KBM	C.CAPACITOR CH 25V 0.1U	1	
C6213	ECEV1HA010	E.CAPACITOR 50V 1U	1	
C6214	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C6215	ECUX1H272KBV	C.CAPACITOR CH 50V 2700P	1	
C6216	ECEV1HA010	E.CAPACITOR 50V 1U	1	
C6217	ECQB1E273JP	CAPACITOR	1	
C6218	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C6219	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C6220	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6223,24	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C6225	ECEV0GA470	E.CAPACITOR CH 4V 47U	1	
C6227	ECEV1HAN010	E.CAPACITOR 50V 1U	1	
C6228	ECEV1HA010	E.CAPACITOR 50V 1U	1	
C6229	ECEV0GA470	E.CAPACITOR CH 4V 47U	1	
C6230	ECUX1H561KBV	C.CAPACITOR CH 50V 560P	1	
C6231,32	ECEV1CA100	E.CAPACITOR 16V 10U	2	
C6233	ECUX1E223ZFV	C.CAPACITOR CH 25V 0.022U	1	
C6234	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6235,36	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C6237	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C6238	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6240-42	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	3	
C6243	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C6244	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C6245	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C6246	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C8001	ECRJA030E11	TRIMMER	1	
C8003	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C8004	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C8005	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C8006	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C8007	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C8009,10	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C8011	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C8012	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C8013	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C8014	ECEV0JA220	E.CAPACITOR 6.3V 22U	1	
C8016-18	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C8020	ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C8021		ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C8022,23		ECEV1HA010	E.CAPACITOR 50V 1U	2	
C8024-27		ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	4	
C8028,29		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C8031		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C8032		ECUM1H123KBN	C.CAPACITOR CH 50V 0.012U	1	
C8033		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C8034		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C8035		ECEV1HA2R2	E.CAPACITOR 50V 2.2U	1	
C8037		ECEV1HA2R2	E.CAPACITOR 50V 2.2U	1	
C8038		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C8039		ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C8040		ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C8041		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C8043		ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C8044		ECUX1H562KBV	C.CAPACITOR CH 50V 5600P	1	
C8046		ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C8047		ECEV0SA470	E.CAPACITOR 4V 47U	1	
C8048		ECUX1H070DCV	C.CAPACITOR CH 50V 7P	1	
C8049		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C8050		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C8051		ECUX1H270JCV	C.CAPACITOR CH 50V 27P	1	
C8053		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C8054		ECUX1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C8055		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C8056		ECEV0SA470	E.CAPACITOR 4V 47U	1	
C8057		ECEV1CA100	E.CAPACITOR 16V 10U	1	
C8058		ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C8061		ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C8062		ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C8063,64		ECUM1H153KBN	C.CAPACITOR CH 50V 0.015U	2	
C8065,66		ECUX1H471KBV	C.CAPACITOR CH 50V 470P	2	
C8101		ECUX1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C8102		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C8103		ECEV1HA2R2	E.CAPACITOR 50V 2.2U	1	
C8104		ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
			DIODES		
D1001		MA132K	DIODE	1	
D1003		MA728	DIODE	1	
D1005		MA728	DIODE	1	
D1006		EC10QS04	DIODE	1	
D1007		SB05-05CP	DIODE	1	
D1008		MA132K	DIODE	1	
D1009		SB05-05CP	DIODE	1	
D1010		MA132K	DIODE	1	
D1012		MA132K	DIODE	1	
D1013		MA3100L	DIODE	1	
D3001		MA132K	DIODE	1	
D3002		MA133	DIODE	1	
D5002		MA132WK	DIODE	1	
D5003		MA132WA	DIODE	1	
D5005		MA132WA	DIODE	1	
D5007		MA132WK	DIODE	1	
D5008		MA132K	DIODE	1	
D6004,05		MA132K	DIODE	2	
D6006		MA132WK	DIODE	1	
D6007		MA132WA	DIODE	1	
D6008		MA132WK	DIODE	1	
D6009,10		MA132WA	DIODE	2	
D6011		MA132K	DIODE	1	
D6012		MA143	DIODE	1	
D6013		MA121	DIODE	1	
D6015		MA133	DIODE	1	
D6016,17		MA132K	DIODE	2	
D6018		MA132WA	DIODE	1	
D6019-22		MA132K	DIODE	4	
D6023		MA132WK	DIODE	1	
D6201,02		MA133	DIODE	2	
D8001		MA132K	DIODE	1	
D8101,02		MA132K	DIODE	2	
			DELAYS		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
DL8001		VLD0225	DELAY	1	
			FILTERS		
FL3001		ELB4C526	FILTER	1	
FL8001		ELB4C528	FILTER	1	
			CONNECTORS		
FP4002		VJS2959B007	CONNECTOR (FEMALE)	1	
FP5001		VJS2958D013	CONNECTOR (FEMALE)	1	
FP6001		VJS2958D018	CONNECTOR (FEMALE)	1	
			INTEGRATED CIRCUITS		
IC1001		MB3778PF	IC	1	
IC3001		VEFH15B	HIC	1	
IC3002		TL8809FEL	IC	1	
IC4001		BA7757BK	IC	1	
IC5001		AN3345FAS	IC	1	
IC6001		S8420BF	IC	1	
IC6003		MN12821R	IC	1	
IC6004		UPD74HC32G	IC	1	
IC6005		UPD4094BG	IC	1	
IC6006		UPD6145G623	IC	1	
IC6007		MN675201VRDT	IC	1	
IC6008		S3500A3	IC	1	
IC6009		M54543AFP	IC	1	
IC6010		LM393DB	IC	1	
IC6012		UPD4071BG	IC	1	
IC6013		PST572CMT	IC	1	
IC6014,15		UPD4071BG	IC	2	
IC6016		TC4S66F	IC	1	
IC6201		LM2902V	IC	1	
IC8001		AN2465NFAP	IC	1	
			COILS		
L1001		VLQ0541	COIL	1	
L1002		VLQ0490	COIL	1	
L1003		VLQ0545	COIL	1	
L1004		VLQ0541	COIL	1	
L1005		ELJPA101KB	COIL 100UH	1	
L1006		ELJPA470KB	COIL 47UH	1	
L1007		ELJPA101KB	COIL 100UH	1	
L1008		ELJPA150KB	COIL 15UH	1	
L3002		ELJFA101JB	COIL 100UH	1	
L3004,05		ELJPA101KB	COIL 100UH	2	
L3006		ELJFA330JB	COIL 33UH	1	
L3007		ELJPA101KB	COIL 100UH	1	
L3008		ELJFA330JB	COIL 33UH	1	
L3009		ELJPA101KB	COIL 100UH	1	
L3013		ELJFA121JB	COIL 120UH	1	
L3014		ELJFA150JB	COIL 15UH	1	
L3015		ELJFA820JB	COIL 82UH	1	
L4002		ELJPA101KB	COIL 100UH	1	
L5001-04		ELJPA101KB	COIL 100UH	4	
L5005		VLQ0401K120	COIL 12UH	1	
L5006		ELJFA470JB	COIL 47UH	1	
L5010		ELJFA120JB	COIL 12UH	1	
L5011		ELJFA151JB	COIL 150UH	1	
L5012		ELJFA330JB	COIL 33UH	1	
L6001		ELJPA101KB	COIL 100UH	1	
L6002		ELJFA330JB	COIL 33UH	1	
L6003		VLQ0463	COIL	1	
L8002		ELJFA100JB	COIL 100UH	1	
L8003		ELJFA150JB	COIL 15UH	1	
L8005		VLQ0218K471	COIL 470UH	1	
L8007		VLQ0163J6R8	COIL 6.8UH	1	
L8008,09		ELJPA470KB	COIL 47UH	2	
L8011		ELJFA150JB	COIL 15UH	1	
L8101		ELJFA330JB	COIL 33UH	1	
			CONNECTORS		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
P6004		VJP3172D006	CONNECTOR (MALE)	1	
			TRANSISTORS		
Q1002		2SD1823	TRANSISTOR	1	
Q1003		2SB1219	TRANSISTOR	1	
Q1004		2SB1073	TRANSISTOR	1	
Q1008		2SD2210	TRANSISTOR	1	
Q1009		2SD2216	TRANSISTOR	1	
Q1010		2SB956X	TRANSISTOR	1	
Q1012		2SD1119	TRANSISTOR	1	
Q1101		2SB1073	TRANSISTOR	1	
Q1102		2SD2216-R	TRANSISTOR	1	
Q3001		2SB970X	TRANSISTOR	1	
Q3006		2SD2216	TRANSISTOR	1	
Q3007		XN4501	TRANSISTOR-RESISTOR	1	
Q3008		XN4401	TRANSISTOR-RESISTOR	1	
Q3009		2SD2216	TRANSISTOR	1	
Q3010		2SB1462	TRANSISTOR	1	
Q4001		2SB1220	TRANSISTOR	1	
Q4002,03		2SD2216-R	TRANSISTOR	2	
Q4004		2SD2216	TRANSISTOR	1	
Q4005		2SD2210	TRANSISTOR	1	
Q4006		2SB1218	TRANSISTOR	1	
Q4007		2SD2216	TRANSISTOR	1	
Q4008		2SB970X	TRANSISTOR	1	
Q4009		2SD1328	TRANSISTOR CHIP	1	
Q4010		XP4501	TRANSISTOR-TRANSISTOR	1	
Q5001		2SC4627	TRANSISTOR	1	
Q5002		2SD2216	TRANSISTOR	1	
Q5003		XN4504	TRANSISTOR-TRANSISTOR	1	
Q5004,05		2SB970X	TRANSISTOR	2	
Q5006		XN4504	TRANSISTOR-TRANSISTOR	1	
Q5007,08		2SA812	TRANSISTOR	2	
Q5010		2SC2404	TRANSISTOR	1	
Q5011		2SB970X	TRANSISTOR	1	
Q5013		2SC4627	TRANSISTOR	1	
Q6001		2SD2216	TRANSISTOR	1	
Q6003,04		2SD2216	TRANSISTOR	2	
Q6005		2SB970X	TRANSISTOR	1	
Q6006		2SD2216	TRANSISTOR	1	
Q6010		2SD2216	TRANSISTOR	1	
Q8001,02		XN4601	TWIN TRANSISTOR	2	
Q8003		2SC4627	TRANSISTOR	1	
Q8004,05		2SK711	TRANSISTOR	2	
Q8007		2SD2216	TRANSISTOR	1	
Q8008		2SB1218	TRANSISTOR	1	
Q8009,10		2SD2216	TRANSISTOR	2	
Q8101		2SB1462	TRANSISTOR	1	
			COMBINATION PARTS		
QR1001,02		UN9213	TRANSISTOR-RESISTOR	2	
QR1003		UN9111	TRANSISTOR-RESISTOR	1	
QR1004		UN9211	TRANSISTOR-RESISTOR	1	
QR1005		UN9115	TRANSISTOR-RESISTOR	1	
QR1006		UN9213	TRANSISTOR-RESISTOR	1	
QR1007		UN9212	TRANSISTOR-RESISTOR	1	
QR3003		UN9212	TRANSISTOR-RESISTOR	1	
QR3007,08		UN9212	TRANSISTOR-RESISTOR	2	
QR3010		XN1212	TRANSISTOR-TRANSISTOR	1	
QR3101,02		UN9212	TRANSISTOR-RESISTOR	2	
QR4001		UN9210	TRANSISTOR-RESISTOR	1	
QR5001		XN1213	TRANSISTOR-TRANSISTOR	1	
QR5002,03		XN1212	TRANSISTOR-TRANSISTOR	2	
QR5004		UN9212	TRANSISTOR-RESISTOR	1	
QR5007-09		UN9212	TRANSISTOR-RESISTOR	3	
QR6001		XN1501	TRANSISTOR-TRANSISTOR	1	
QR6002		UN9217	TRANSISTOR-RESISTOR	1	
QR6003		UN9112	TRANSISTOR-RESISTOR	1	
QR6004		UN9213	TRANSISTOR-RESISTOR	1	
QR6005		UN921E	TRANSISTOR-RESISTOR	1	
QR6006		XN1213	TRANSISTOR-TRANSISTOR	1	
QR6008		UN9213	TRANSISTOR-RESISTOR	1	
QR6009		UN9113	TRANSISTOR-RESISTOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
QR6010		UN9115	TRANSISTOR-RESISTOR	1	
QR6011		XN1501	TRANSISTOR-TRANSISTOR	1	
QR6012		UN9210	TRANSISTOR-RESISTOR	1	
QR6013		UN9110	TRANSISTOR-RESISTOR	1	
QR6014		UN9115	TRANSISTOR-RESISTOR	1	
QR8001		UN9212	TRANSISTOR-RESISTOR	1	
QR8002		UN9111	TRANSISTOR-RESISTOR	1	
QR8010		XN1212	TRANSISTOR-TRANSISTOR	1	
QR8101		XN1212	TRANSISTOR-TRANSISTOR	1	
			RESISTORS		
R1001		VRE0034E153	M.RESISTOR CH 1/10W 15K	1	
R1003		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R1005		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R1009		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R1010		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R1011		ERJ8GEYJ471	M.RESISTOR CH 1/8W 470	1	
R1013		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1014		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R1015		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1016		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1017		ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	
R1018		ERJ6GEYJ331	M.RESISTOR CH 1/10W 330	1	
R1019		ERJ8GEYJ330	M.RESISTOR CH 1/8W 33	1	
R1020		ERJ8GEYJ391	M.RESISTOR CH 1/8W 390	1	
R1022		VRE0067G822	M.RESISTOR CH 8.2K	1	
R1023		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1024		VRE0067G222	M.RESISTOR CH 2.2K	1	
R1026		ERJ6GEYJ331	M.RESISTOR CH 1/10W 330	1	
R1027		VRE0067G103	M.RESISTOR CH 10K	1	
R1028		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R1029		VRE0067G152	M.RESISTOR CH 1.5K	1	
R1030		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R1031		ERJ8GEYJ471	M.RESISTOR CH 1/8W 470	1	
R1032		ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1	
R1033		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1034		ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R1036		ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	1	
R1037		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R1038		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R1039		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1040		VRE0034E121	M.RESISTOR CH 1/10W 120	1	
R1041		VRE0034E511	M.RESISTOR CH 1/10W 510	1	
R1046		ERJ8GEY0R00	M.RESISTOR CH 1/8W 0	1	
R1101		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1102		ERJ8GEYJ821	M.RESISTOR CH 1/8W 820	1	
R1103		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R1104		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R1105		ERJ6GEY0R00	M.RESISTOR CH 1/10W 0	1	
R3002		ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R3003		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3004		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R3005		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R3006		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R3008		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3009		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R3011		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R3012,13		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R3017		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R3019		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R3020		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3023		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R3024		ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
R3025		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3026,27		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	2	
R3028		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3030		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R3031		ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R3032		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R3033		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R3039		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R3049		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3050		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R3052		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3053	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R3061	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3063	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R3101	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3102	ERJ3GEYJ474	M.RESISTOR CH 1/16W 470K	1	
R4001	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1	
R4002	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4003	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R4004	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R4005	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R4006	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4009	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R4010	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1	
R4011	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4014	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R4016	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R4017	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4018	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4019,20	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R4021	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4022	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R4024	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R4025,26	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R4027	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R4028	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4029	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4030	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R4031	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R4032	ERJ6GEYJ820	M.RESISTOR CH 1/10W 82	1	
R4033	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4034	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R4035	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4036	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1	
R4037	ERJ6GEYJ221	M.RESISTOR CH 1/10W 220	1	
R4038	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4039	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R4040	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4042	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R4043	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4044	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R4045	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R4046	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4047	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4048	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R4049	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4051	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4053	ERJ6GEYJ225	M.RESISTOR CH 1/10W 2.2M	1	
R4055	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R5002,03	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	2	
R5004	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5005	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5006	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R5007	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5008	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5009	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R5010	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R5011-14	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	4	
R5015	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5016	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5017	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5018	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R5020	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R5021	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5022	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R5023	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5025,26	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	2	
R5028,29	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	2	
R5030,31	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	2	
R5033,34	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	2	
R5035	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R5037	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R5039	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R5040	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1	
R5041	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R5042	ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R5043	ERJ6GEYJ4R7	M.RESISTOR CH 1/10W 4.7	1	
R5044	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R5045,46	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	2	
R5047	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1	
R5058,59	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R5060	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R5061	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5062,63	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R5064	ERJ3GEYG682	M.RESISTOR CH 1/16W 6.8K	1	
R5065	ERJ3GEYG471	M.RESISTOR CH 1/16W 470	1	
R5066	ERJ3GEYG562	M.RESISTOR CH 1/16W 5.6K	1	
R5067	ERJ3GEYG221	M.RESISTOR CH 1/16W 220	1	
R5068	ERJ3GEYG393	M.RESISTOR CH 1/16W 39K	1	
R5069	ERJ3GEYG683	M.RESISTOR CH 1/16W 68K	1	
R5070	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R5072	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5075	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R5076	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5077	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R5078	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6001,02	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R6003	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R6004	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6006	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R6011	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6012	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1	
R6013	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6014	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6016,17	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	2	
R6018	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6019	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6020	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R6021	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6022-24	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	3	
R6025	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6026	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6029	VRE0034E823	M.RESISTOR CH 1/10W 82K	1	
R6030	VRE0034E272	M.RESISTOR CH 1/10W 2.7K	1	
R6031	VRE0034E563	M.RESISTOR CH 1/10W 56K	1	
R6032	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6035	VRE0067G333	M.RESISTOR CH 33K	1	
R6036	ERJ6GEY0R00	M.RESISTOR CH 1/10W 0	1	
R6037	VRE0067G393	M.RESISTOR CH 39K	1	
R6039	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6041	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6042	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6043	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R6044	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6045,46	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R6047,48	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R6049	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1	
R6050-53	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	4	
R6056-59	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	4	
R6060-67	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	8	
R6068	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6069	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6070-72	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R6073	ERJ6GEYJ225	M.RESISTOR CH 1/10W 2.2M	1	
R6074,75	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R6076	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6077	ERJ8GEYJ680	M.RESISTOR CH 1/8W 68	1	
R6078	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6079	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6080	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R6081	ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	1	
R6082	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6083	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6084	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6085	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6086	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6087,88	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	2	
R6089	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6091	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R6092	ERJ8GEYJ331	M.RESISTOR CH 1/8W 330	1	
R6093-96	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R6101		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6103		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6104		ERJ8GEYJ271	M.RESISTOR CH 1/8W 270	1	
R6105		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6106		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6110		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6111		ERJ8GEYJ331	M.RESISTOR CH 1/8W 330	1	
R6112		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6113-16		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	4	
R6118,19		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R6120		ERJ8GEYJ100	M.RESISTOR CH 1/8W 10	1	
R6125		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6126		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6127		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6128		ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R6129		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6141		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R6142,43		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R6201		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R6202		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6203		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R6204		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R6205		ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R6206		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R6207		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R6208		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R6209,10		ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R6217		ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R6218		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6219		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R6221		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6222		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6223		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R6224,25		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	2	
R6226		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R6227		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R6228,29		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	2	
R6230		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6231		ERJ3GEYJ684	M.RESISTOR CH 1/16W 680K	1	
R6232		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6233,34		ERJ3GEYG103	M.RESISTOR CH 1/16W 10K	2	
R6235		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R6236,37		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R6238		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R6239		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6240		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R6241,42		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R6243		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R6244		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6245		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R6251		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	1	
R6254		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8004		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R8007		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R8008		ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R8009		ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R8010,11		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
R8014		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8015		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R8016,17		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R8018		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R8019,20		ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	2	
R8021		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8022		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R8023		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R8024		ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1	
R8030		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R8031,32		ERJ3GEYJ274	M.RESISTOR CH 1/16W 270K	2	
R8033		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R8034		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R8035		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R8038,39		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R8040		ERJ6GEYJ225	M.RESISTOR CH 1/10W 2.2M	1	
R8041		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R8042		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	

Ref.NO.		Part No.	Part Name & Description	Pcs	Remarks
R8043		ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R8045		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R8046		ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R8047		ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R8048		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R8049		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8050		ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
R8051		ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R8055		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8057		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8059		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8070		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R8071		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8072		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R8074		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R8075		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8081		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R8082		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R8083		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R8084		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8085		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R8087		ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R8088		ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R8089		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R8090		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R8091		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R8092		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R8093		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R8094		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8095		ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R8097		ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
R8098		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R8099		ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1	
R8101		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1	
R8102,03		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R8104		ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1	
R8105,06		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R8107		ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1	
R8108,09		ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	2	
R8110		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R8201		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R8202		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R8203		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R8204		ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R8205		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R8206		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R8207		ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R8209		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R8210		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R8211,12		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R8213,14		ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
			TRANSFORMERS		
T1001		VTP0329	TRANSFORMER	1	
T4001		VLQ0494	TRANSFORMER	1	
			VARIABLE RESISTORS		
VR3001		EVM7JSX30B13	V.RESISTOR 1K	1	
VR3002		EVM7JSX30B23	V.RESISTOR 2K	1	
VR3003		EVM7JSX30B52	V.RESISTOR 5.2K	1	
VR4001		EVM7JSX30B13	V.RESISTOR 1K	1	
VR4002		EVM7JSX30B54	V.RESISTOR 50K	1	
VR5101		EVM7JSX30B52	V.RESISTOR 5.2K	1	
VR6201		EVM7JSX30B15	V.RESISTOR 100K	1	
VR8008		EVM7JSX30B14	V.RESISTOR 10K	1	
VR8009		EVM7JSX30B15	V.RESISTOR 100K	1	
VR8010		EVM7JSX30B53	V.RESISTOR 5K	1	
			CRYSTAL OSCILLATORS		
X6001		VSX0376	CRYSTAL OSCILLATOR	1	
X6002		VSX0439	CRYSTAL OSCILLATOR	1	
X8001		VSX0419	CRYSTAL OSCILLATOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			MISCELLANEOUS		
		VSC3382	HEAD AMP SHIELD COVER	1	
		VSC3383	SHIELD COVER (BOTTOM)	2	
		VSC3355	POWER SHIELD COVER	1	
	■	VEP06737A	VTR OPERATION C.B.A.		(NLA)
			CONNECTORS		
B1501		VJS3105A014	CONNECTOR (FEMALE)	1	
			DIODES		
D1501-05		MA151WA	DIODE	5	
D1506,07		MA151WK	DIODE	2	
D1508		BR1102W	DIODE	1	
			RESISTORS		
R1510		VSF0090	RESISTOR	1	<!>
			SWITCHES		
SW1501-08		EVQQHP01W	SWITCH	8	
SW1509		EVQQH901M	SWITCH	1	
SW1510,11		EVQQHP01W	SWITCH	2	
SW1512		VSP0584	SWITCH	1	
SW1513		VSS0298	SWITCH	1	
SW1514		VSS0301	SWITCH	1	
			MISCELLANEOUS		
		VMC0724	SHOE TERMINAL (R)	1	
		VMC0725	SHOE TERMINAL (L)	1	
	■	VEP27071A	CAMERA OPERATION (1) C.B.A.		(NLA)
			CONNECTORS		
B051		VJS3073C006	CONNECTOR (FEMALE)	1	
			DIODES		
D051,52		MA151WA	DIODE	2	
			SWITCHES		
SW051-53		EVQQQH01M	SWITCH	3	
SW054		ESD165206	SWITCH	1	
	■	VEP27074A	CAMERA OPERATION (2) C.B.A.		(NLA)

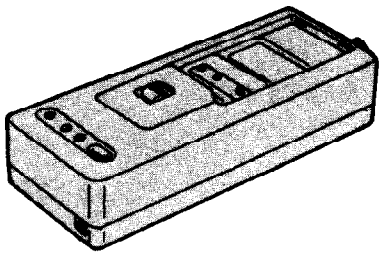
Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			CONNECTORS		
B071		VJS3073C006	CONNECTOR (FEMALE)	1	
			SWITCHES		
SW071-73		EVQQH901M	SWITCH	3	
	■	VEP00S36A	MIC INTERFACE C.B.A.		(NLA)
			CONNECTORS		
B4301		VJP3106B013	CONNECTOR (MALE)	1	
B4302		VJS2238	CONNECTOR (FEMALE)	1	
			CAPACITORS		
C4301		ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C4302		ECEA1HKK010	E.CAPACITOR 50V 1U	1	
C4303		ECEA0JKA470	E.CAPACITOR 6.3V 47U	1	
C4304		ECUM1H151JCN	C.CAPACITOR CH 50V 150P	1	
C4305		ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C4307		ECEA0JKA470	E.CAPACITOR 6.3V 47U	1	
			CONNECTORS		
FP4304		VJS2128	CONNECTOR (FEMALE)	1	
J4301,02		VJJ0289	MIC JACK	2	
P4303		VJP1599T	CONNECTOR(MALE) 6P	1	
			TRANSISTORS		
Q4301		2SC2405	TRANSISTOR	1	
Q4302		2SD601-R	TRANSISTOR	1	
			RESISTORS		
R4301		ERJ6GEYJ103	M.RESISTOR CH 1/10W 10K	1	
R4303		ERJ6GEYJ394	M.RESISTOR CH 1/10W 390K	1	
R4304		ERJ6GMYJ222	M.RESISTOR CH 1/10W 2.2K	1	
R4305		ERJ6GEYJ682	M.RESISTOR CH 1/10W 6.8K	1	
R4306		ERJ6GEYJ151	M.RESISTOR CH 1/10W 150	1	
R4307,08		ERJ6GEYJ332	M.RESISTOR CH 1/10W 3.3K	2	
R4309		ERJ6GMYJ681	M.RESISTOR CH 1/10W 680	1	
R4310		ERJ6GEYJ101	M.RESISTOR CH 1/10W 100	1	
	■	VEP03941A	ZOOM OPERATION C.B.A.		(NLA)
			CONNECTORS		
P041		VJP3270	CONNECTOR (MALE)	1	
P4303		VJF0274	CONNECTOR	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
	■	VEP00S35A	JACK C.B.A.		(NLA)
			CONNECTORS		
B1702		VJS3175A016	CONNECTOR (FEMALE)	1	
			DIODES		
D1801		31DQ04FC7	DIODE	1	
			CONNECTORS		
J1701		VEJ1163	AV JACK	1	
J1801		VJJ0310	D/A JACK	1	
J1802		VJJ0169	JACK	1	
J1901		VJS312B	CONNECTOR (FEMALE)	1	
			COILS		
L1801,02		VLP0111	COIL	2	
			RESISTORS		
R1701		ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R1801		VSF0059	FUSE	1	<1>
			SWITCHES		
SW1901		VSP0524	SWITCH	1	
			MISCELLANEOUS		
		VEK5780	BATTERY CATCHER	1	
	■	VEK5302	CHARACTOR GENERATOR C.B.A.		(NLA)
			CONNECTORS		
J1507		VJJ0163	CONNECTOR	1	
	■	VEP02370A	DRIVE C.B.A.		(NLA)
			CAPACITORS		
C2101		ECST1AC226Z	T.CAPACITOR CH 10V 22U	1	
C2102		ECUM1H103KBM	C.CAPACITOR CH 50V 0.01U	1	
C2103		ECUX1C1042FV	C.CAPACITOR CH 16V 0.1U	1	
C2104		ECUM1H473KBM	C.CAPACITOR CH 50V 0.047U	1	
C2105		ECUM1H223KBM	C.CAPACITOR CH 50V 0.022U	1	
C2106		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	1	
C2108,09		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	2	
C2110		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C2111-13		ECUX1C1042FV	C.CAPACITOR CH 16V 0.1U	3	
C2114		ECST1AY4752	T.CAPACITOR CH 10V 4.7U	1	
C2115		ECUM1H103KBM	C.CAPACITOR CH 50V 0.01U	1	
C2116		ECUM1E104KBM	C.CAPACITOR CH 25V 0.1U	1	
C2117		ECUM1H473KBM	C.CAPACITOR CH 50V 0.047U	1	
C2118		ECUM1H333KBM	C.CAPACITOR CH 50V 0.033U	1	
C2120		ECST1AX106Z	T.CAPACITOR 10V 10U	1	
C2122-24		ECUX1H1032FV	C.CAPACITOR CH 50V 0.01U	3	
C2125		ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C2126-28		ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C2129		ECST1AD336Z	T.CAPACITOR 10V 33U	1	
			INTEGRATED CIRCUITS		
IC2101		AN3890FBS	IC	1	
IC2102		UN218CU	IC	1	
IC2103		AN3890FBS	IC	1	
IC2104		TDM3702	IC	1	
			CONNECTORS		
P2101		VJP2962C024	CONNECTOR (MALE)	1	
P2102		VJS2959D018	CONNECTOR (FEMALE)	1	
P2151		VJS2959D017	CONNECTOR (FEMALE)	1	
			TRANSISTORS		
Q2111		2SD2216	TRANSISTOR	1	
			RESISTORS		
R2101		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R2102		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2106		ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R2108		ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R2109		ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R2110		ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R2111		ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2113		ERJ6GEYJ101	M.RESISTOR CH 1/10W 100	1	
R2114		ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R2115		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2116		ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1	
R2117,18		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R2119		ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1	
R2120		ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R2121		ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2123		ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R2125		ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R2162		ERJ3GEYG823	M.RESISTOR CH 1/16W 82K	1	
R2163,64		ERJ3GEYG103	M.RESISTOR CH 1/16W 10K	2	
			MISCELLANEOUS		
		VMZ1672	PLATE BARRIER	1	
	■	VEP06762A	MECHANICAL FLEXIBLE CARD		(NLA)
			C.B.A.		
			MISCELLANEOUS		
		ON2170-LM	REEL SENSOR	2	
		VMD1498	T REEL SENSOR HOLDER	1	
		VMD1499	S REEL SENSOR HOLDER	1	

AC Adaptor

VW-AS1E/B/A Ⓑ



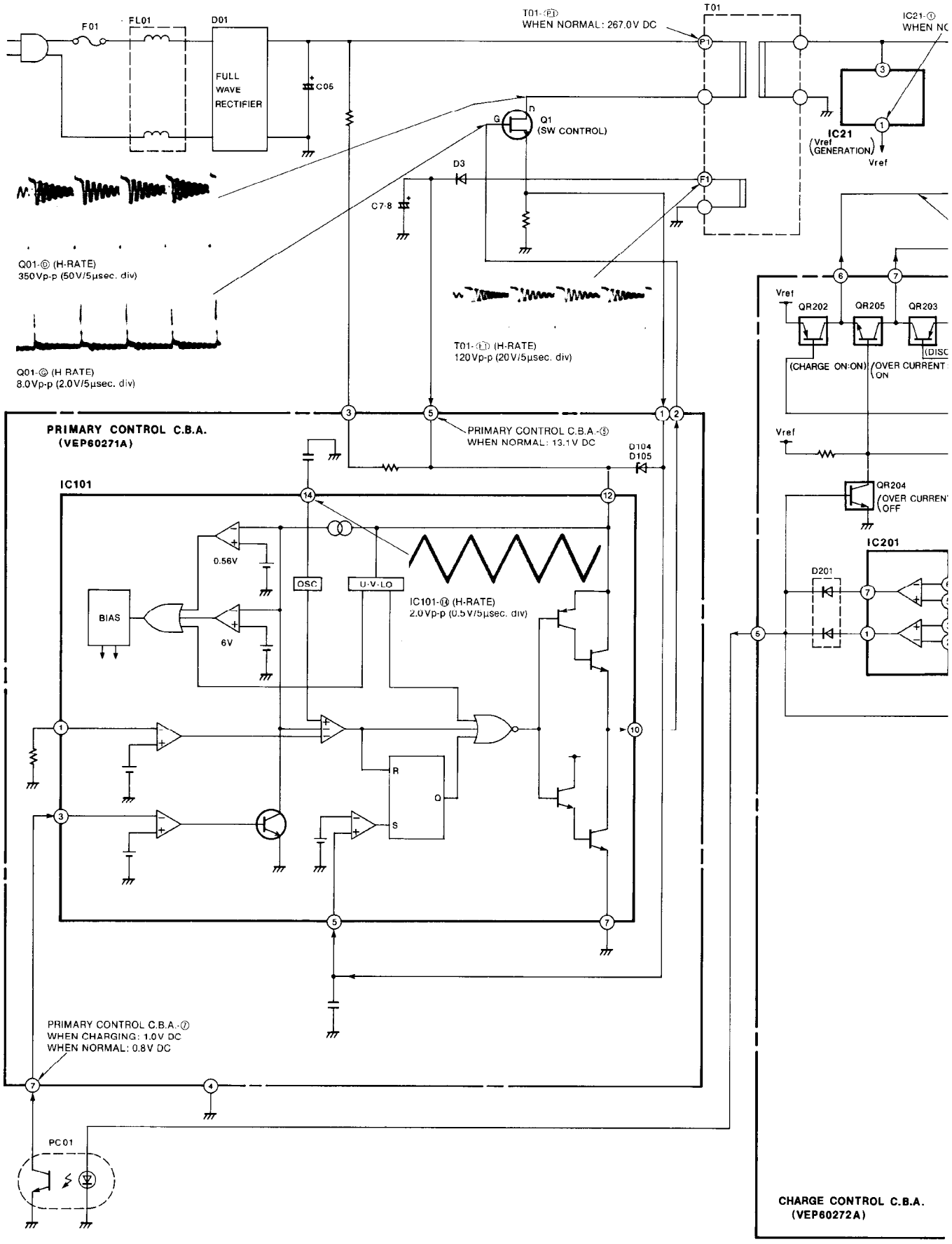
SPECIFICATIONS

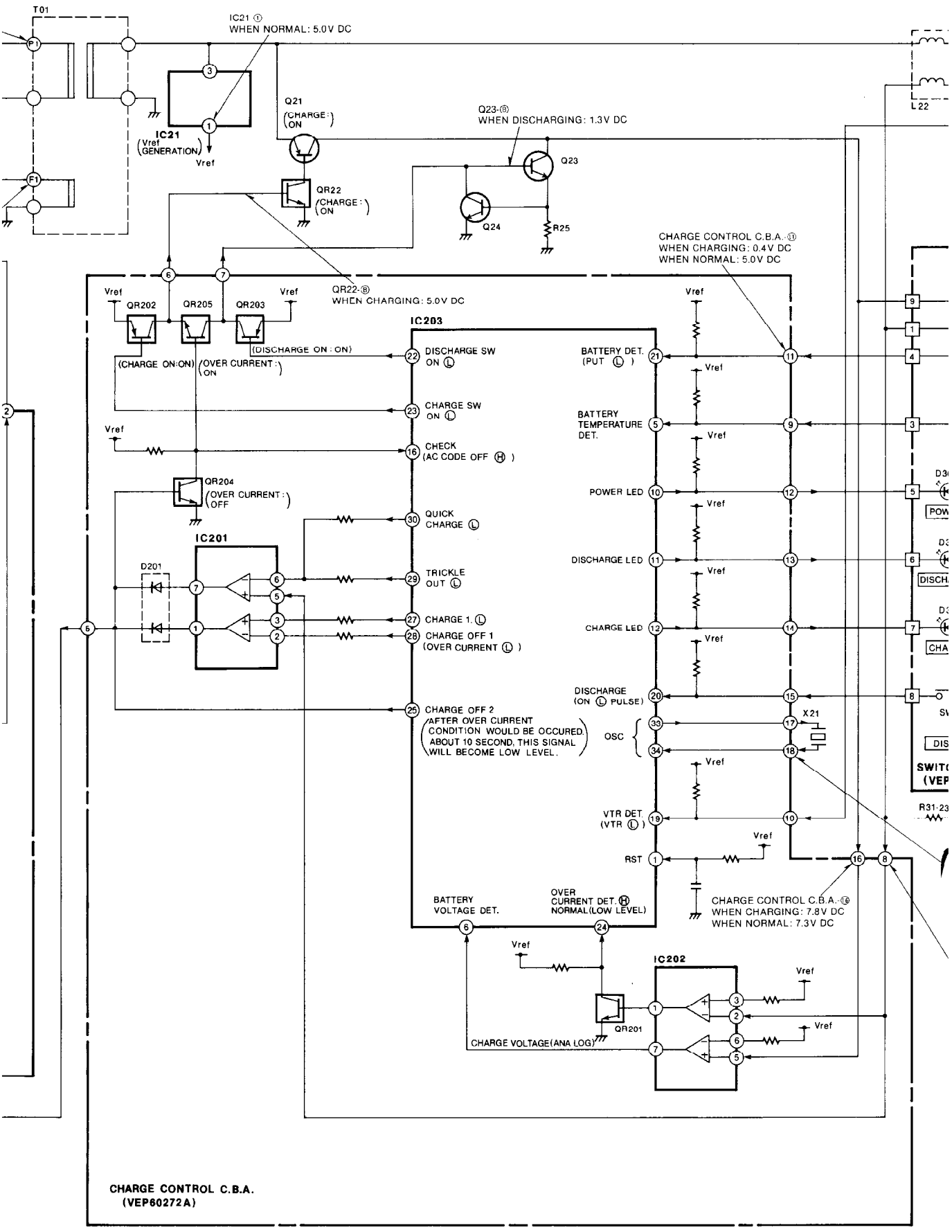
ITEM	SPECIFICATION
POWER	Source: AC 100~240 V (50/60 Hz)
	Consumption: Approx. 25 W
	Output: DC 6 V, 1.8 A for VHS Movie DC 6 V, 1.3 A for battery charge
DIMENSIONS	70 (W) × 58 (H) × 178 (D) mm
WEIGHT	Approx. 370 g

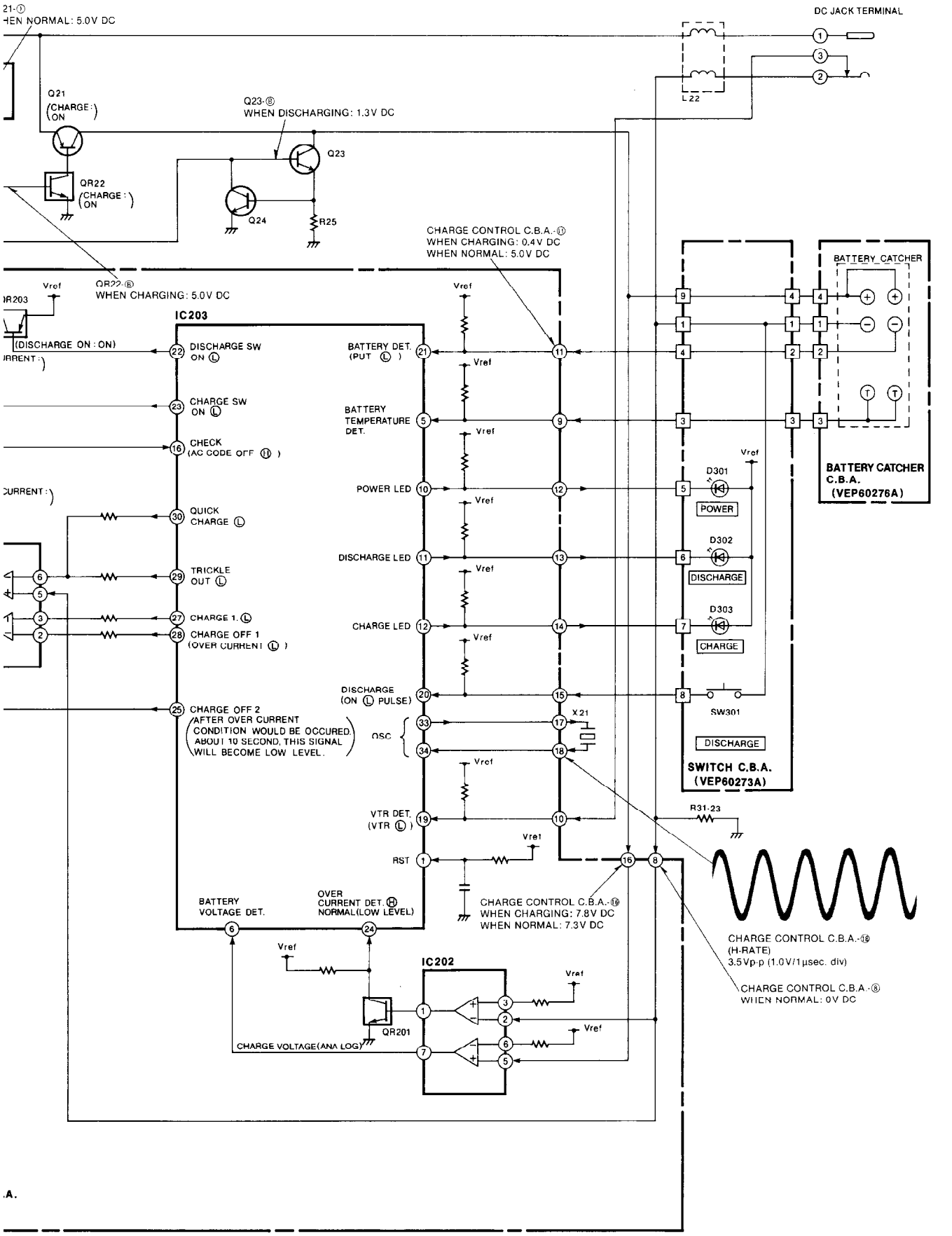
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

CAUTION: FOR USE WITH VHS VIDEO MOVIE, MODEL NV-G202, NV-G220.
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

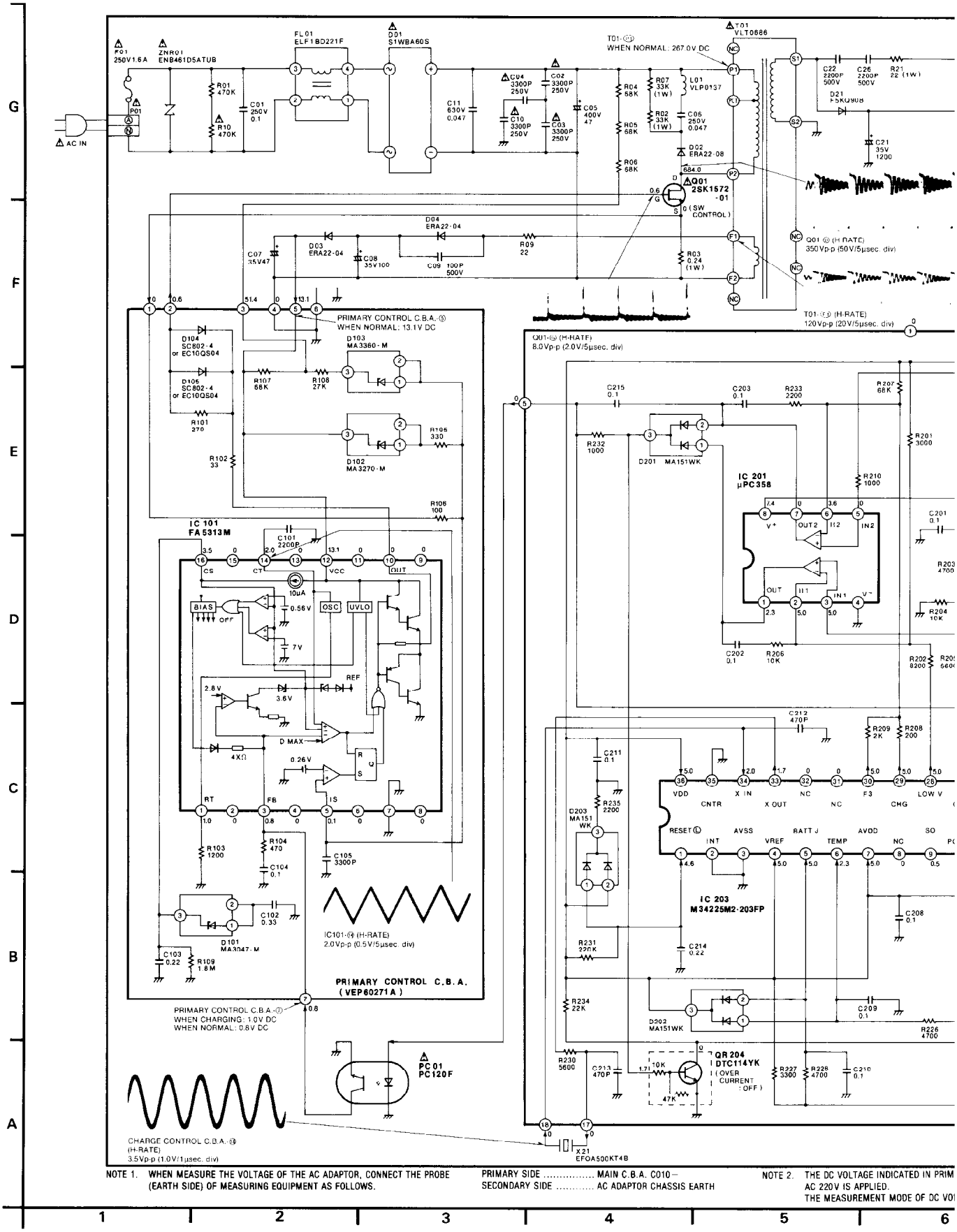
3. AC ADAPTOR BLOCK DIAGRAM




T01
IC21 ①
WHEN NORMAL: 5.0V DC
IC21
(Vref GENERATION)
Vref
Q21
(CHARGE : ON)
Q23-Ⓑ
WHEN DISCHARGING: 1.3V DC
Q23
Q24
R25
QR22
(CHARGE : ON)
L22
CHARGE CONTROL C.B.A.-①
WHEN CHARGING: 0.4V DC
WHEN NORMAL: 5.0V DC
QR22-Ⓑ
WHEN CHARGING: 5.0V DC
QR202
QR205
QR203
(DISCHARGE ON : ON)
(CHARGE ON:ON)
(OVER CURRENT : ON)
QR204
(OVER CURRENT : OFF
IC203
DISCHARGE SW ON Ⓛ
CHARGE SW ON Ⓛ
CHECK (AC CODE OFF Ⓗ)
QUICK CHARGE Ⓛ
TRICKLE OUT Ⓛ
CHARGE 1. Ⓛ
CHARGE OFF 1 (OVER CURRENT Ⓛ)
CHARGE OFF 2
(AFTER OVER CURRENT CONDITION WOULD BE OCCURED. ABOUT 10 SECOND, THIS SIGNAL WILL BECOME LOW LEVEL.
IC201
D201
BATTERY DET. (PUT Ⓛ)
BATTERY TEMPERATURE DET.
POWER LED
DISCHARGE LED
CHARGE LED
DISCHARGE (ON Ⓛ PULSE)
OSC
X21
VTR DET. (VTR Ⓛ)
RST
BATTERY VOLTAGE DET.
OVER CURRENT DET. Ⓗ NORMAL(LOW LEVEL)
CHARGE CONTROL C.B.A.-⑯
WHEN CHARGING: 7.8V DC
WHEN NORMAL: 7.3V DC
IC202
QR201
CHARGE VOLTAGE(ANA LOG)
CHARGE CONTROL C.B.A.
(VEP60272A)


21-①
HEN NORMAL: 5.0V DC
DC JACK TERMINAL
L22
Q21
(CHARGE : ON)
Q23-Ⓑ
WHEN DISCHARGING: 1.3V DC
Q23
QR22
(CHARGE : ON)
Q24
R25
CHARGE CONTROL C.B.A.-①
WHEN CHARGING: 0.4V DC
WHEN NORMAL: 5.0V DC
QR22-Ⓑ
WHEN CHARGING: 5.0V DC
Vref
IC203
(DISCHARGE ON : ON)
DISCHARGE SW ON Ⓛ
CHARGE SW ON Ⓛ
CHECK (AC CODE OFF Ⓗ)
QUICK CHARGE Ⓛ
TRICKLE OUT Ⓛ
CHARGE 1. Ⓛ
CHARGE OFF 1 (OVER CURRENT Ⓛ)
CHARGE OFF 2
AFTER OVER CURRENT CONDITION WOULD BE OCCURED. ABOUT 10 SECOND, THIS SIGNAL WILL BECOME LOW LEVEL.
BATTERY DET. (PUT Ⓛ)
BATTERY TEMPERATURE DET.
POWER LED
DISCHARGE LED
CHARGE LED
DISCHARGE (ON Ⓛ PULSE)
OSC
X21
40H
VTR DET. (VTR Ⓛ)
RST
BATTERY VOLTAGE DET.
OVER CURRENT DET. Ⓗ NORMAL(LOW LEVEL)
CHARGE CONTROL C.B.A.-⑲
WHEN CHARGING: 7.8V DC
WHEN NORMAL: 7.3V DC
IC202
QR201
CHARGE VOLTAGE(ANALOG)
BATTERY CATCHER
BATTERY CATCHER C.B.A. (VEP60276A)
D301
POWER
D302
DISCHARGE
D303
CHARGE
SW301
DISCHARGE
SWITCH C.B.A. (VEP60273A)
R31-23
CHARGE CONTROL C.B.A.-⑱
(H-RATE)
3.5Vp-p (1.0V/1μsec. div)
CHARGE CONTROL C.B.A.-⑧
WHEN NORMAL: 0V DC

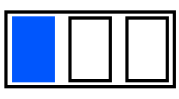
4. AC ADAPTOR SCHEMATIC DIAGRAM

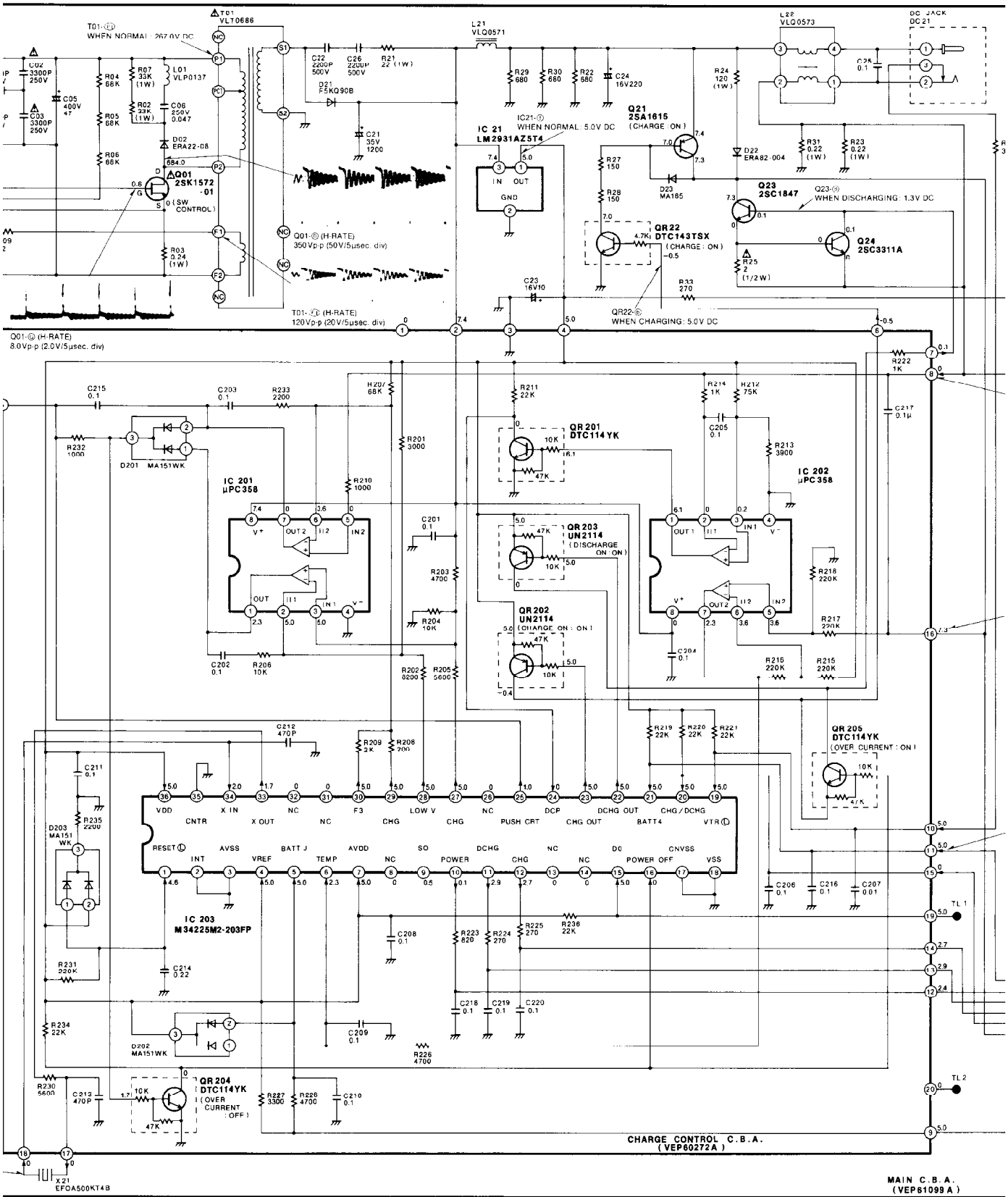


NOTE 1. WHEN MEASURE THE VOLTAGE OF THE AC ADAPTOR, CONNECT THE PROBE (EARTH SIDE) OF MEASURING EQUIPMENT AS FOLLOWS.

PRIMARY SIDE ..... MAIN C.B.A. C010—
SECONDARY SIDE ..... AC ADAPTOR CHASSIS EARTH

NOTE 2. THE DC VOLTAGE INDICATED IN PRIM AC 220V IS APPLIED.
THE MEASUREMENT MODE OF DC VO



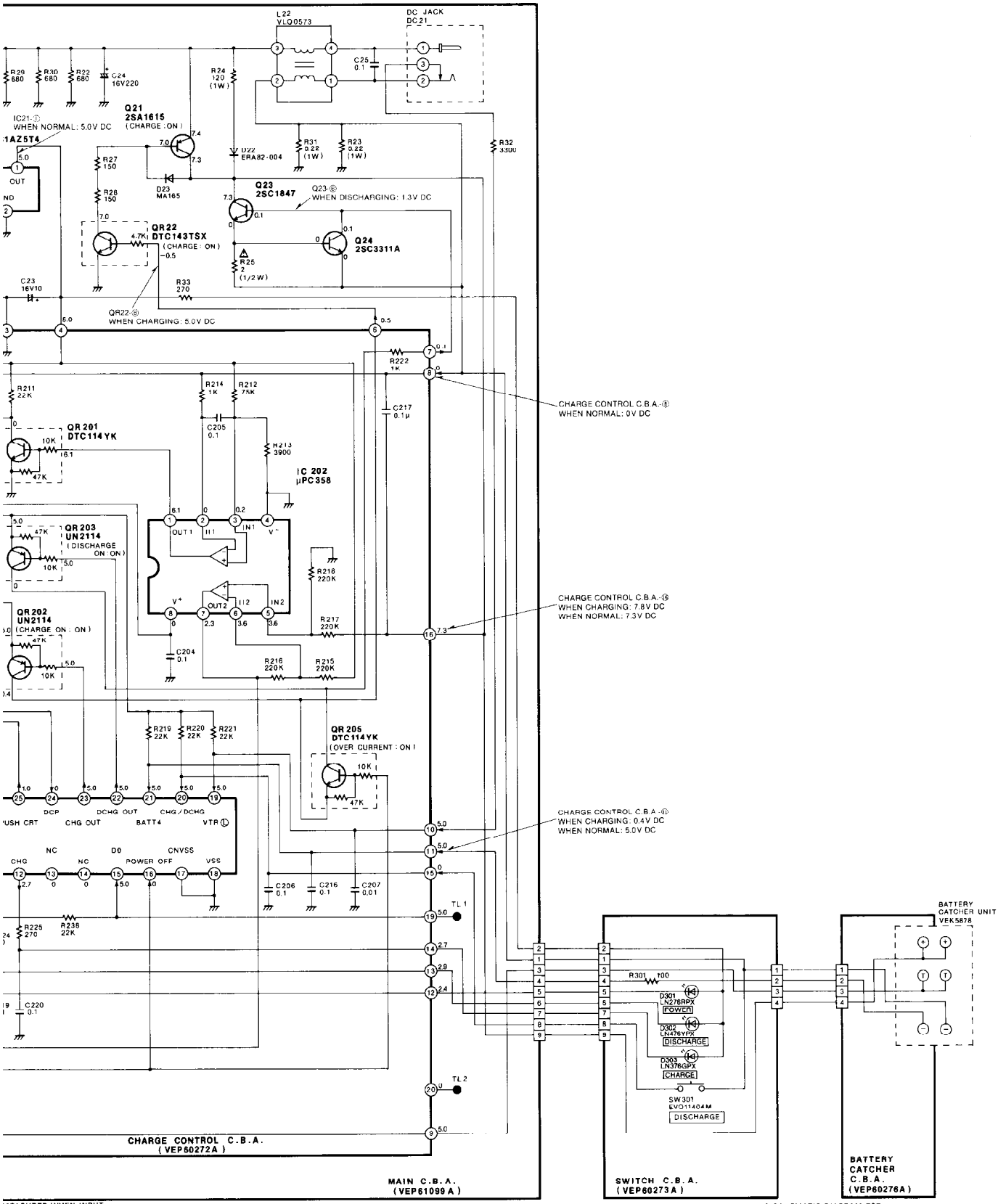


SIDE ..... MAIN C.B.A. C010
Y SIDE ..... AC ADAPTOR CHASSIS EARTH

NOTE 2. THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS MEASURED WHEN INPUT AC 220V IS APPLIED.
THE MEASUREMENT MODE OF DC VOLTAGE ON THIS DIAGRAM IS NOLOAD.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

4 | 5 | 6 | 7 | 8 | 9



MEASURED WHEN INPUT

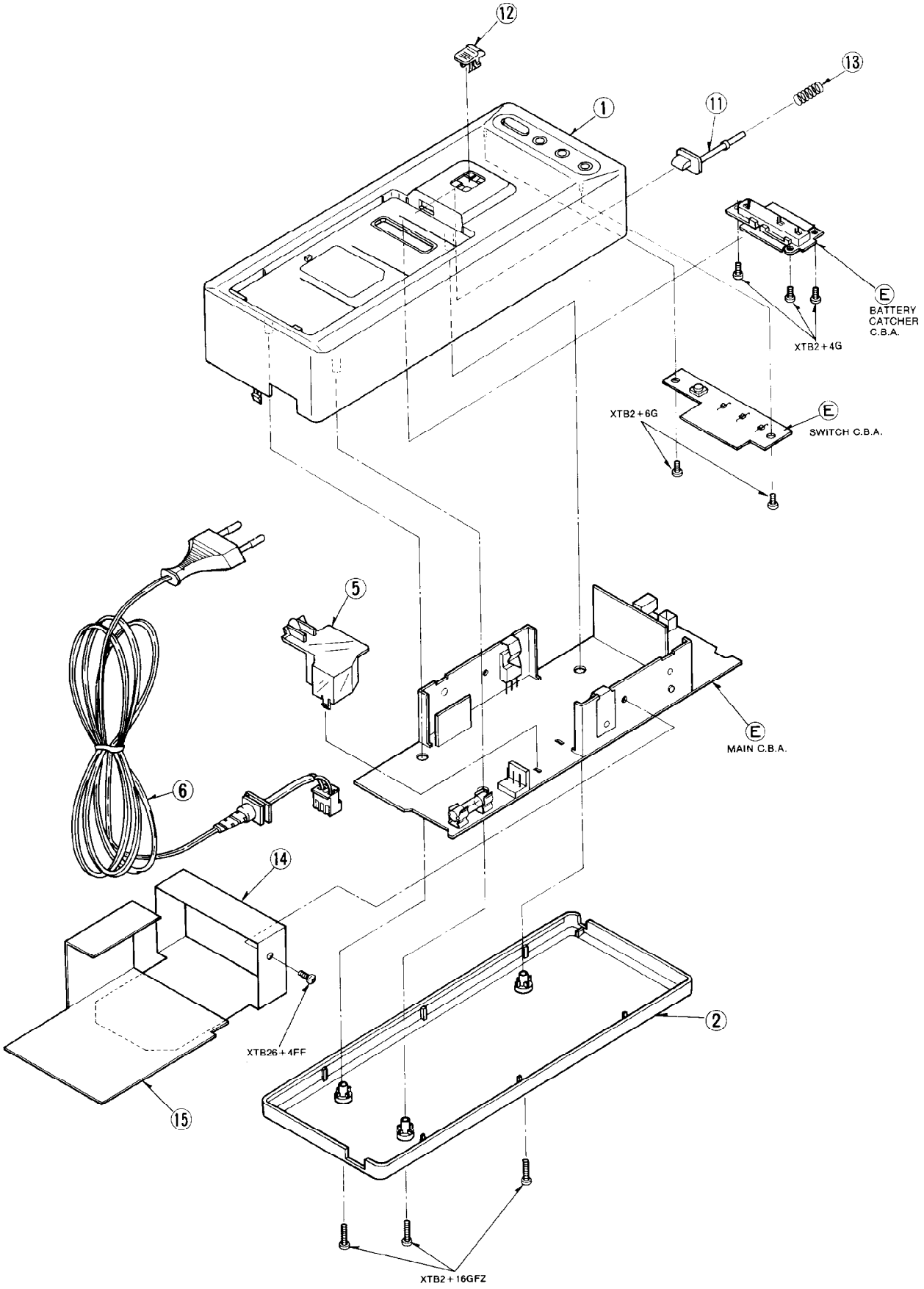
IS DIAGRAM IS NOLOAD.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE. DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

7 8 9 10 11

6. EXPLODED VIEW ❶ CASING & CHASSIS PARTS SECTION



3. VW-AS1E/B/A Mechanical Replacement Parts List

Note: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
1		VYK4343	TOP CASE UNIT	1	
2		VKM3124	BOTTOM CASE	1	
5		VMZ1972	INSULATION BARRIER (A)	1	<!>
6		VJA0670	AC CORD	1	VW-AS1E <!>
6		VJA0671	AC CORD	1	VW-AS1B <!>
6		VJA0672	AC CORD	1	VW-AS1A <!>
11		VGQ2239	LOCK PIECE	1	
12		VGU5273	BATTERY EJECT BUTTON	1	
13		VMB2207	EJECT SPRING	1	
14		VSC3643	SHIELD PLATE	1	
15		VMZ1973	INSULATION BARRIER (B)	1	<!>

4. VW-AS1E/B/A Electrical Replacement Parts List

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf), P=uuF.
4. The P.C.Board units marked width'■'show below the main assembled parts.
5. Printed circuit board assembly with mark(NLA) is no longer available after discontinuation of the product.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
		VEP61099A	MAIN C.B.A.	1	(NLA)
					INCLUDING THE
					PRYMARY CONTROL
					C.B.A.(VEP60271A),
					CHARGE CONTROL
					C.B.A.(VEP60272A).
		VEP60271A	PRIMARY CONTROL C.B.A.	1	(NLA)
					INCLUDED IN MAIN
					C.B.A.(VEP61099A).
		VEP60272A	CHARGE CONTROL C.B.A.	1	(NLA)
					INCLUDED IN MAIN
					C.B.A.(VEP61099A).
		VEP60273A	SWITCH C.B.A.	1	(NLA)
		VEP60276A	CATCHER C.B.A.	1	(NLA)
	■	VEP61099A	MAIN C.B.A.		(NLA)
			CAPACITORS		
C01		ECQU2A104MV	P.CAPACITOR 250V 0.01U	1	<!>
C02-04		VCK0023	CAPACITOR	3	<!>
C05		ECOS2GG470D	P.CAPACITOR 400V 47P	1	
C06		ECQE2473KF	P.CAPACITOR	1	
C07		ECEA1VGE470	E.CAPACITOR 35V 47U	1	
C08		ECEA1VFE101	E.CAPACITOR 35V 100U	1	
C09		ECKD2H101KB	C.CAPACITOR 500V 100P	1	
C10		VCK0023	CAPACITOR	1	<!>
C11		ECQE6473B11	P.CAPACITOR	1	
C21		ECA1VFQ122	E.CAPACITOR 35V 1200P	1	
C22		ECKD2H222KB	C.CAPACITOR 500V 2200P	1	
C23		ECEA1CK100	E.CAPACITOR 16V 10U	1	
C24		ECEA1CGE221	E.CAPACITOR 16V 220U	1	
C25		ECFF1H104ZF	S.CAPACITOR 50V 0.1U	1	
C26		ECKD2H222KB	C.CAPACITOR 500V 2200P	1	
C101		ECUM1H222JCM	C.CAPACITOR CH 50V 2200P	1	
C102		ECUM1C334KBM	C.CAPACITOR CH 16V 0.33U	1	
C103		ECUM1C224KBM	C.CAPACITOR CH 16V 0.22U	1	
C104		ECUM1H104KBM	C.CAPACITOR CH 50V 0.1U	1	
C105		ECUM1H332KBN	C.CAPACITOR CH 50V 3300P	1	
C201		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	1	
C202,03		ECUM1H104KBM	C.CAPACITOR CH 50V 0.1U	2	
C204-06		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	3	
C207		ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C208-11		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	4	
C212,13		ECUM1H471JCN	C.CAPACITOR CH 50V 470P	2	
C214		ECUM1C224KBM	C.CAPACITOR CH 16V 0.22U	1	
C215		ECUM1H104KBM	C.CAPACITOR CH 50V 0.1U	1	
C216-20		ECUM1E104ZFN	C.CAPACITOR CH 25V 0.1U	5	
			DIODES		
D01		S1WBA60S	DIODE	1	<!>

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
D02		ERA22-08	DIODE	1	
D03,04		ERA22-04	DIODE	2	
D21		F5KQ90B	DIODE	1	
D22		ERA82-004	DIODE	1	
D23		MA165VT	DIODE	1	
D101		MA3047M	DIODE	1	
D102		MA3270-M	DIODE	1	
D103		MA3360-M	DIODE	1	
D104,05		SCB024TE12R	DIODE	2	
D201-03		MA151WK	DIODE	3	
			CONNECTORS		
DC21		VJJ0347	DC JACK	1	
			FUSES		
F01		XBA2C16TB0	FUSE	1	<!>
			COILS		
FL01		ELF18D221F	COIL	1	<!>
			INTEGRATED CIRCUITS		
IC21		LM2931AZ5T4	IC	1	
IC101		FA5313M	IC	1	
IC201,02		UPC358G2	IC	2	
IC203		M34225-203FP	IC	1	
			COILS		
L01		VLP0137	COIL	1	
L21		VLQ0571	COIL	1	
L22		VLQ0573	COIL	1	
			CONNECTORS		
P01		VJP2073	CONNECTOR	1	<!>
P101		VJR0727	CONNECTOR	1	
P201		VJR0391	CONNECTOR	1	
P202		VJR0392	CONNECTOR	1	
			DIODES		
PC01		PC120F	DIODE	1	<!>
			TRANSISTORS		
Q01		2SK1572	TRANSISTOR	1	<!>
Q21		2SA1615	TRANSISTOR	1	
Q23		2SC1847	TRANSISTOR	1	
Q24		2SC3311A	TRANSISTOR	1	
			COMBINATION PARTS		
QR22		DTC143TSX	TRANSISTOR	1	
QR201		DTC114YK	TRANSISTOR-RESISTOR	1	
QR202,03		UN2114	TRANSISTOR-RESISTOR	2	
QR204		UN2214	TRANSISTOR-RESISTOR	1	
			RESISTORS		
R01		ERDS2TJ474	C.RESISTOR 1/4W 470K	1	
R02		ERG1SJ333	M.RESISTOR 1W 33K	1	
R03		ERX1SJR24	M.RESISTOR 1W 0.24	1	
R04-06		ERDS2TJ683	C.RESISTOR 1/4W 68K	3	
R07		ERG1SJ333	M.RESISTOR 1W 33K	1	
R09		ERDS2TJ220	C.RESISTOR 1/4W 22	1	
R10		ERDS2TJ474	C.RESISTOR 1/4W 470K	1	
R21		ERG1SJ220	M.RESISTOR 1W 22	1	
R22		ERDS2TJ681	C.RESISTOR 1/4W 680	1	
R23		ERX1SZGR22	M.RESISTOR 1W 0.22	1	
R24		ERG1SJ121	M.RESISTOR 1W 120	1	
R25		ERQ12AJ2R0	F.RESISTOR 1/2W 2.0	1	<!>

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R27,28		ERDS2TJ151	C.RESISTOR 1/4W 150	2	
R29,30		ERDS2TJ681	C.RESISTOR 1/4W 680	2	
R31		ERX1S2GR22	M.RESISTOR 1W 0.22	1	
R32		ERDS2TJ332	C.RESISTOR 1/4W 3.3K	1	
R33		ERDS2TJ271	C.RESISTOR 1/4W 270	1	
R101		ERJ6GMYJ271	M.RESISTOR CH 1/10W 270	1	
R102		ERJ6GMYJ330	M.RESISTOR CH 1/10W 33	1	
R103		ERJ6GMYG122	M.RESISTOR CH 1/10W 1.2K	1	
R104		ERJ6GMYJ471	M.RESISTOR CH 1/10W 470	1	
R105		ERJ6GMYJ331	M.RESISTOR CH 1/10W 330	1	
R106		ERJ6GMYJ101	M.RESISTOR CH 1/10W 100	1	
R107		ERJ8GCYG683	M.RESISTOR CH 1/8W 68K	1	
R108		ERJ8GCYG273	M.RESISTOR CH 1/8W 27K	1	
R109		ERJ6GMYK185	M.RESISTOR CH 1/10W 1.8M	1	
R201		ERJ6GMYG302	M.RESISTOR CH 1/10W 3K	1	
R202		ERJ6GMYG822	M.RESISTOR CH 1/10W 8.2K	1	
R203		ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R204		ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R205		ERJ6GMYG562	M.RESISTOR CH 1/10W 5.6K	1	
R206		ERJ6GMYJ103	M.RESISTOR CH 1/10W 10K	1	
R207		ERJ6GMYG683	M.RESISTOR CH 1/10W 68K	1	
R208		ERJ6GMYG201	M.RESISTOR CH 1/10W 200	1	
R209		ERJ6GMYG202	M.RESISTOR CH 1/10W 2K	1	
R210		ERJ6GMYJ102	M.RESISTOR CH 1/10W 1K	1	
R211		ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R212		ERJ6GMYG753	M.RESISTOR CH 1/10W 75K	1	
R213		ERJ6GMYG392	M.RESISTOR CH 1/10W 3.9K	1	
R214		ERJ6GMYJ102	M.RESISTOR CH 1/10W 1K	1	
R215-18		ERJ6GMYG224	M.RESISTOR CH 1/10W 220K	4	
R219-21		ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	3	
R222		ERJ6GMYJ102	M.RESISTOR CH 1/10W 1K	1	
R223		ERJ6GMYJ821	M.RESISTOR CH 1/10W 820	1	
R224,25		ERJ6GMYJ271	M.RESISTOR CH 1/10W 270	2	
R226		ERJ6GMYJ472	M.RESISTOR CH 1/10W 4.7K	1	
R227		ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R228		ERJ6GMYJ472	M.RESISTOR CH 1/10W 4.7K	1	
R230		ERJ6GMYJ562	M.RESISTOR CH 1/10W 5.6K	1	
R231		ERJ6GMYJ224	M.RESISTOR CH 1/10W 220K	1	
R232		ERJ6GMYJ102	M.RESISTOR CH 1/10W 1K	1	
R233		ERJ6GMYJ222	M.RESISTOR CH 1/10W 2.2K	1	
R234		ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R235		ERJ6GMYJ222	M.RESISTOR CH 1/10W 2.2K	1	
R236		ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
			TRANSFORMERS		
T01		VLT0606	TRANSFORMER	1	<!>
			CRYSTAL OSCILLATORS		
X21		EF0A500KT4B	CRYSTAL OSCILLATOR	1	
ZNR01		ENB461D5ATUB	SURGE ABSORBER 460V	1	<!>
			MISCELLANEOUS		
		VSC3641	HEAT SINK (A)	1	
		VSC3642	HEAT SINK (B)	1	
		VMC0661	TR PRESSURE SPRING	3	
	■	VEP60273A	SWITCH C.B.A.		(NLA)
			DIODES		
D301		LN376GPXT4KU	DIODE	1	
D302		LN476YPXT4KU	DIODE	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
D303		LN276RPXT4KU	DIODE	1	
			RESISTORS		
R301		ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
			SWITCHES		
SW301		EVQ11404M	SWITCH	1	
	■	VEP60276A	CATCHER C.B.A.		(NLA)
			CONNECTRTOS		
PJ02		VWJ0616	FLEXIBLE CALE (4PIN)	1	
			MISCELLANEOUS		
		VFK5878	BATTERY CATCHER UNIT	1	